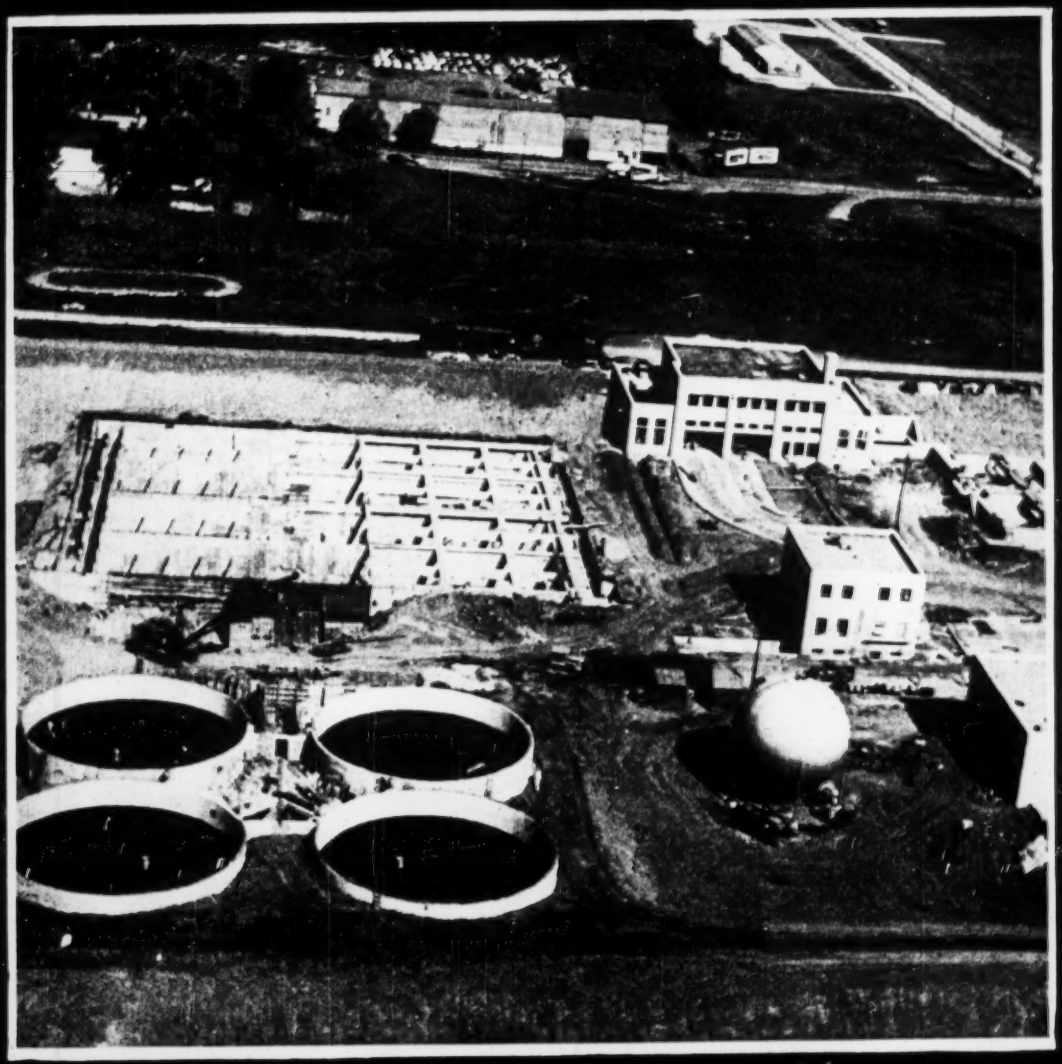
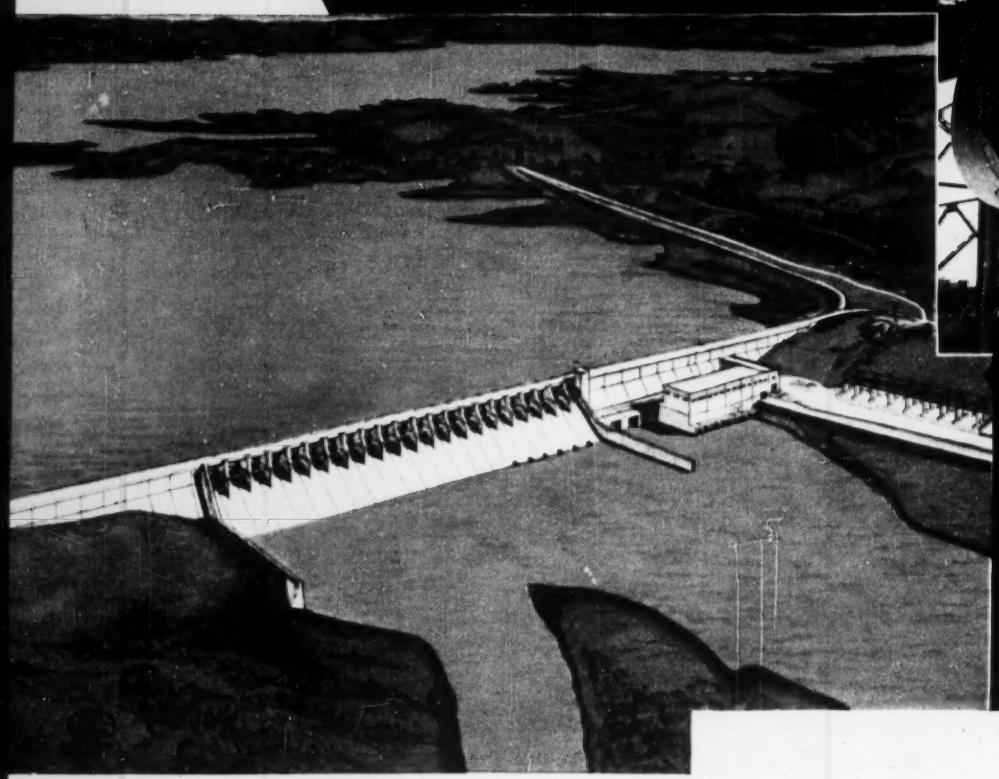
ENGINEERING NEWS-RECORD



A McGRAW-HILL PUBLICATION

1,430,000

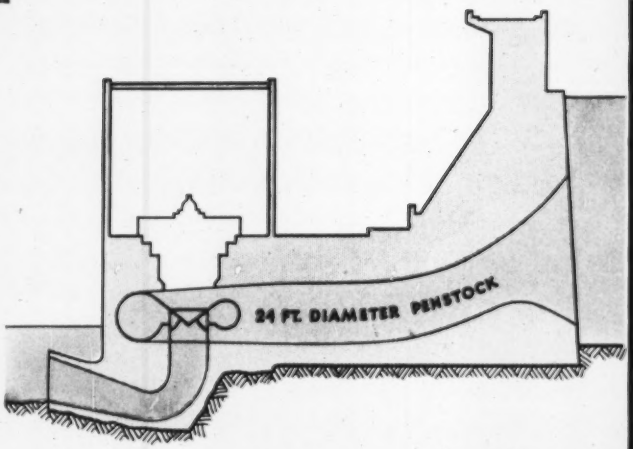


REQUIRED FOR NINE STEEL PENSTOCKS AT BUGGS ISLAND DAM

We installed nine steel penstocks . . . six 24 ft. diam., one 15 ft. 6 in. diam., and two 5 ft. 6 in. diam. . . . at the Buggs Island Dam across the Roanoke River near South Hill, Va. The plates in these penstocks range from $\frac{3}{8}$ to $\frac{7}{8}$ in. in thickness and weigh a total of approximately 1,430,000 lbs.

A Chicago Bridge & Iron Company Field Welding Supervisor is assigned to every job to check the quality of work as it progresses. It is his duty to check equipment, examine plugs cut from welds and make independent reports to the district office. He is your assurance that your CB & I structure is the best money can buy . . . and at *no extra cost to you!*

Write our nearest office for information, estimates or quotations on welded steel plate structures of any type.



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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA. In Canada: HORTON STEEL WORKS, L

There's more to tractors than meets the eye . . .

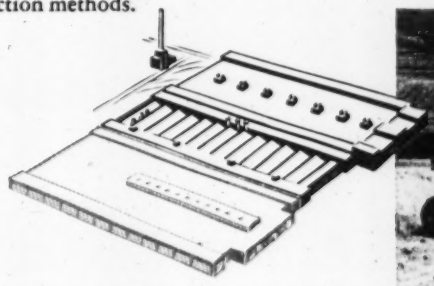
The real "pay-off" value of any tractor to its owner is how it measures up to the standards set by today's modern production methods.

To meet these needs, Allis-Chalmers started from scratch and built *a line of tractors with a future.* Thousands now have been tested and proved on the toughest proving ground of them all, actual jobs, and they have more than measured up to expectations. Owners have found that these tractors set new standards of performance . . . that they give greater output with less down time . . . plus more profit, whether pulling, pushing, digging or dozing. Operators have discovered new ease and comfort in operation, too; and mechanics say these are the easiest-to-service tractors that they have ever worked on.

Yes, the "family circle" of users of Allis-Chalmers tractors is growing constantly. Many users who bought their first Allis-Chalmers tractor only a few years ago now have fleets of them, and many others who operate only one or two tractors have become Allis-Chalmers boosters.

This acceptance is the springboard behind a big plant expansion at Springfield, Illinois, which will enable Allis-Chalmers to meet *your* future needs. See your nearby Allis-Chalmers dealer now for the inside facts on pace-setting tractors that measure up to modern production methods.

This 72-drawbar hp., 18,800-lb. HD-9 is making friends in every field because its power and weight make it ideal for dozens of today's jobs. And, operators can gain up to 25 percent more production on short dozing jobs because they can go from any forward to any reverse speed with just one shift



From haul road to highway to heavy construction . . . wherever big production is essential to the job, this big HD-15 has more than proved its worth. With 109 drawbar hp. and 27,850 lb. weight, it works quickly, efficiently as a dozer, tractor-shovel, puller or pusher.

The 40-drawbar hp., 11,250-lb. HD-5 is a versatile jack-of-all-trades for fleet owners as well as one-man operations . . . with hydraulically controlled Tracto-Shovel, it's equally useful loading bulk materials, dozing, digging basements, dozens of other jobs.

Here's real tractor teamwork . . . four HD-20's in a "train" — three pulling scrapers, one pushing — all working together for big production. With torque converter drive, they synchronize speeds at contact . . . automatically load at the fastest speed that job conditions permit, with less strain on operators and equipment. With 175 engine hp. and 41,000 lb. weight, the HD-20 is today's new yardstick of crawler tractor performance.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U.S.A.

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CONVENIENCE
and
ACCURACY

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Engineered
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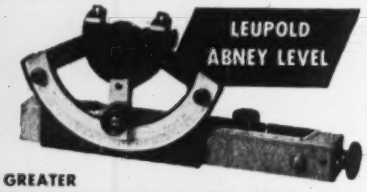
Advanced design engineering and precision manufacturing techniques have earned world-wide acclaim for LEUPOLD instruments since 1907. Exclusive LEUPOLD features...dependable LEUPOLD accuracy are your assurance of time-saving, trouble-free service under all working conditions.



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- CHECKING ROAD GRADES
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- GENERAL LEVELING WORK

Exclusive LEUPOLD design holds scales in milled slide, ready for immediate use without removing and reversing the frame ...saves time and trouble on all jobs. Bubble magnifier adjusts internally to the user's eye. No draw eyepiece to retract for carrying...no re-focusing each time instrument is used. New improved micrometer adjustment on index arm gives easier, faster and more accurate readings.

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- Degrees
- Percent
- Topographic
- Chainage Corrections

Overall Length.....6½ inches
Radius of Arc.....1¾ inches
Comes in saddle leather case with belt loop
MODEL A (Choice of any 2 scales)....$27.50
MODEL B (Choice of any 3 scales)....$30.00

Compact, lightweight instrument for all preliminary leveling work. Measures only 5¼" in overall length. Exclusive LEUPOLD bubble magnifier adjusts internally to user's eye...brighter bubble eliminates eyestrain and permits faster, more accurate readings.

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Diameter.....¾ inch
Comes in saddle leather case $11.70

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or write for new literature on the LEUPOLD line of levels and compasses.

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Publisher

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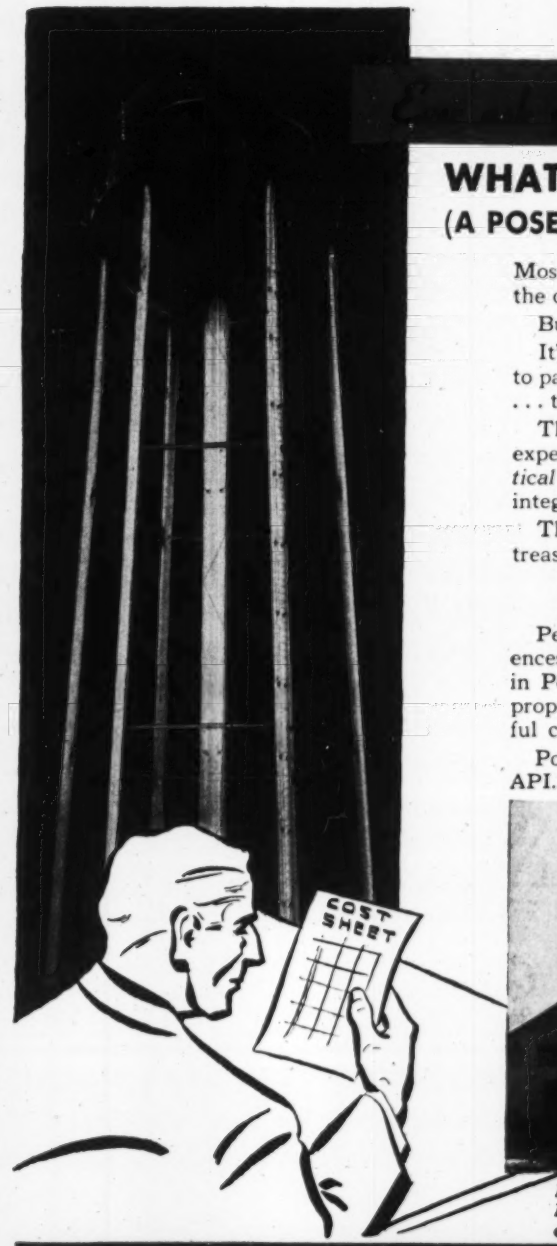


TREASURER . . .

WHAT *HE* THINKS OF YOUR TANKS?

(A POSEY IRON Bid Might Interest Him and YOU)

Most treasurers are apt to put cost first. And cost is certainly *not* the only factor to consider when buying steel plate construction.

But —

It's good engineering as well as good financial policy to refuse to pay a penny more for tanks . . . or pressure vessels . . . or stacks . . . than is necessary fully to meet *the standard desired.*

The Posey Iron Works offers you 42 years of money-saving experience over the full range of steel plate fabrication . . . *practical* engineering and design service that concentrates on structural integrity and safety rather than on cost-padding "frills".

That's why we say a Posey Iron bid might interest your treasurer as well as you.

Edges of Plates Properly Prepared for Welding . . .
Electrodes Carefully Selected

Perhaps more than any other production step, welding influences tank costs and structural soundness. Every electric welder in Posey's shops is fully qualified. No plate is welded without proper preparation of edges . . . electrodes are chosen after careful consideration of requirements.

Posey meets all standard codes including ASME; API-ASME; API. Consultation does not obligate you.

Posey Iron Works self-supporting stacks installed at the Niagara Falls Plant of the International Graphite & Electrode Division of Speer Carbon Co. Height: 50 ft. Diameter: 3 ft.

POSEY IRON WORKS, INC.

Steel Plate Division

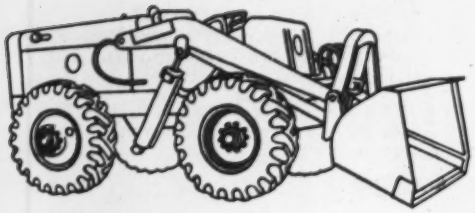
LANCASTER, PA.

New York Office: Graybar Building

ESTABLISHED SINCE 1910

DIVISIONS
Brick Machinery
Foundry
Industrial Heating
Iroquois
Shipbuilding
Steel Plate

Better Features Mean



SIMPLICITY

"PAYLOADER" design is simple and accessible — proven by low maintenance records covering millions of hours of "PAYLOADER" service. A total of only three hydraulic rams are used for boom and bucket control, eliminating many parts and levers.

CROWDING ACTION

When the "PAYLOADER" booms rise, the bucket is given a combination forward and upward motion in a powerful crowding action independent of the machine's forward motion. Full bucket loads are quickly and easily obtained.

TIP-BACK BUCKET

Continued lifting motion of the booms automatically tips the bucket back to a level position so that heaping loads can be carried without spilling and with good balance and operator visibility.

Plus THESE SPECIAL FEATURES

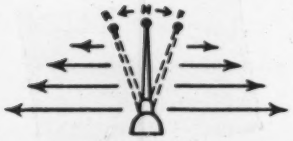
(on specific models)

- power-steering
- four-wheel-drive
- rear-wheel-drive
- front-wheel-drive
- gas or diesel
- extra-high lift

Extra attachments:

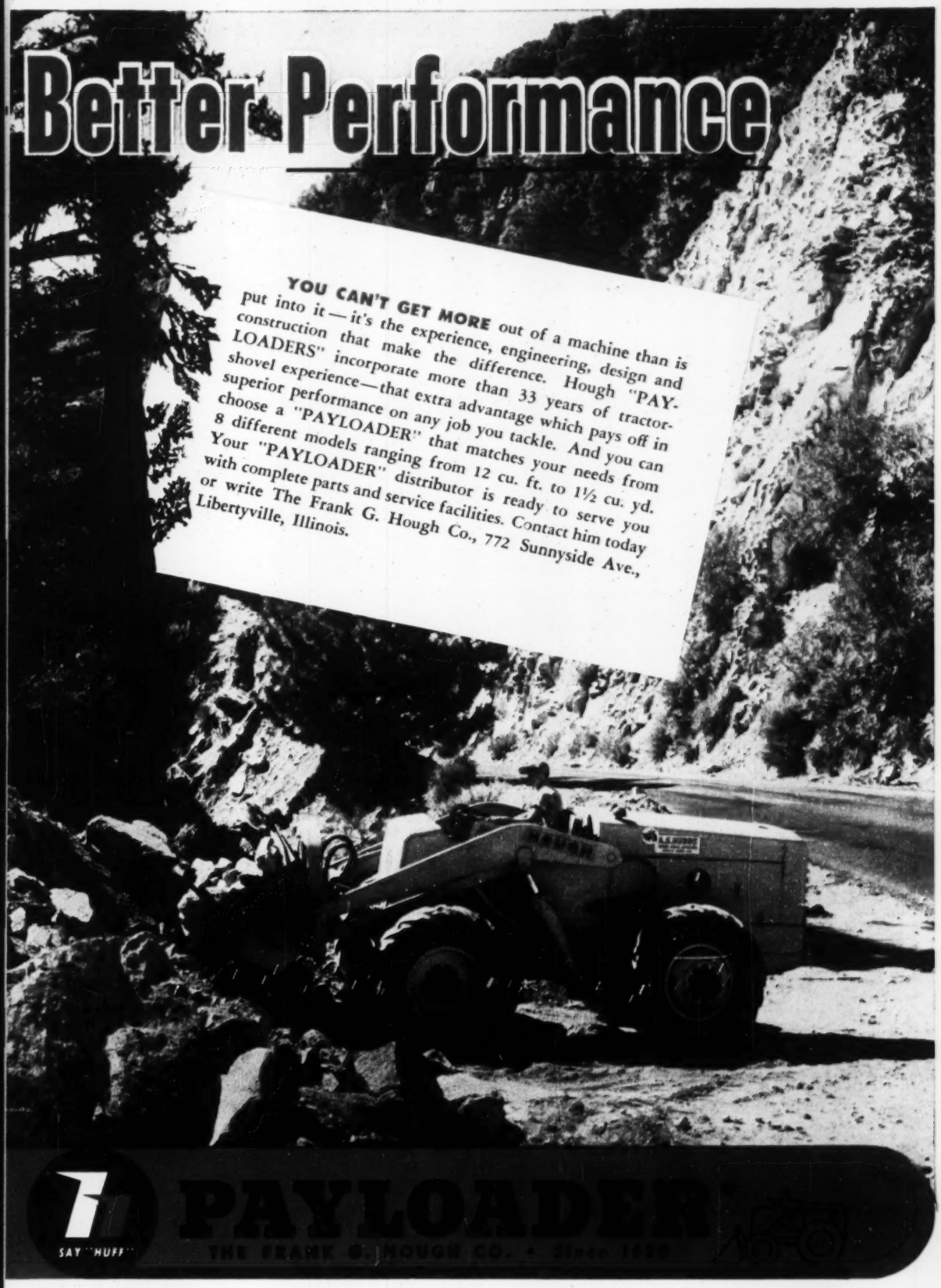
- bulldozer
- fork lift
- crane hook
- snow plows

MORE SPEEDS



Tractor-shovel work involves considerable reversing. That's why "PAYLOADERS" have several reverse speeds *faster* than forward — plus a separate quick-acting reversing lever. These features insure faster, easier operation and more production.

OVER 150 DISTRIBUTORS TO SERVE YOU


Better Performance
YOU CAN'T GET MORE out of a machine than is put into it—it's the experience, engineering, design and construction that make the difference. Hough "PAYLOADERS" incorporate more than 33 years of tractor-shovel experience—that extra advantage which pays off in superior performance on any job you tackle. And you can choose a "PAYLOADER" that matches your needs from 8 different models ranging from 12 cu. ft. to 1½ cu. yd. Your "PAYLOADER" distributor is ready to serve you with complete parts and service facilities. Contact him today or write The Frank G. Hough Co., 772 Sunnyside Ave., Libertyville, Illinois.
SAY "HUFF"
PAYLOADER
THE FRANK G. HOUGH CO. • Since 1928

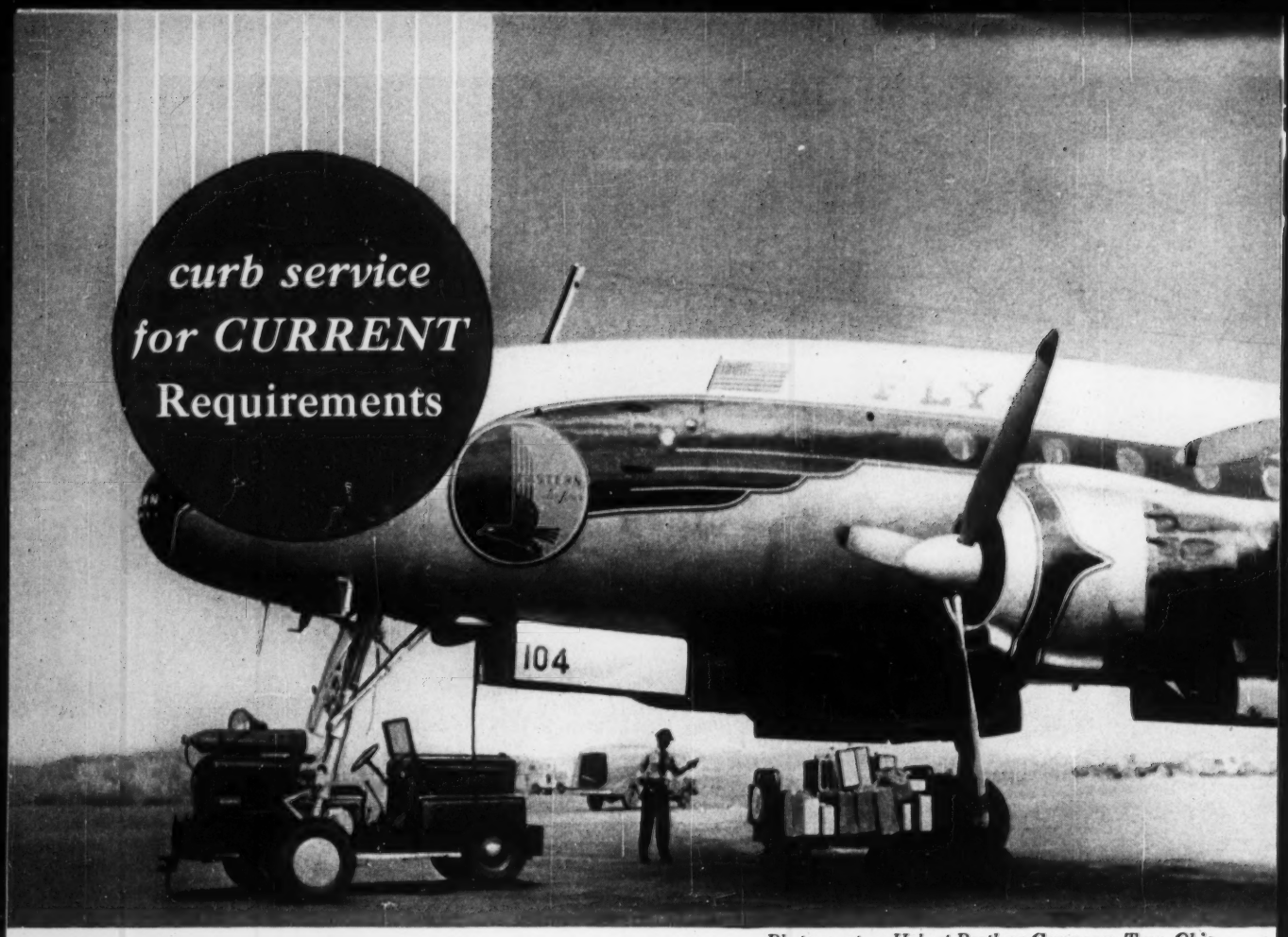
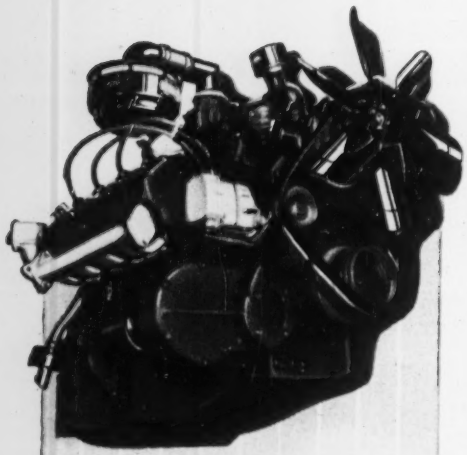


Photo courtesy Hobart Brothers Company, Troy, Ohio

Chrysler horsepower on the ground for added Safety in the Air . . .



The moment the big plane stops and the pilot cuts the engines, the generators, which in flight supply electrical power to the batteries, stop too. But the electrical equipment in the plane—air conditioning, lights, radio, food containers, everything electrical—continue operating off the plane's batteries. Only for a moment, however. In that length of time a self-propelled and self-powered energizer takes over and supplies all necessary current, even starting the plane's engines when it's time to leave.

Among the most popular mobile ground power units are the "Power-Pull" units manufactured by Hobart and powered by Chrysler. The unit pictured uses the mighty 180 horsepower Chrysler V-8 Industrial Engine and can furnish 1000 amperes, 28.5 volts of direct current under continuous operation—enough to handle the electrical load of the largest aircraft. Power from the same engine propels the unit, enabling it to serve also as a towing tractor.

This is another in the long list of important uses of Chrysler Industrial Power. Whether your equipment requires V-8 or Six cylinder engines, Chrysler can supply them with gasoline, propane or natural gas burning carburetor, 3, 4 or 5-speed transmission and other optional equipment.

For your power needs, see a Chrysler Industrial Engine Dealer, or write: ***Dept. 76, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

CHRYSLER
Industrial Engines

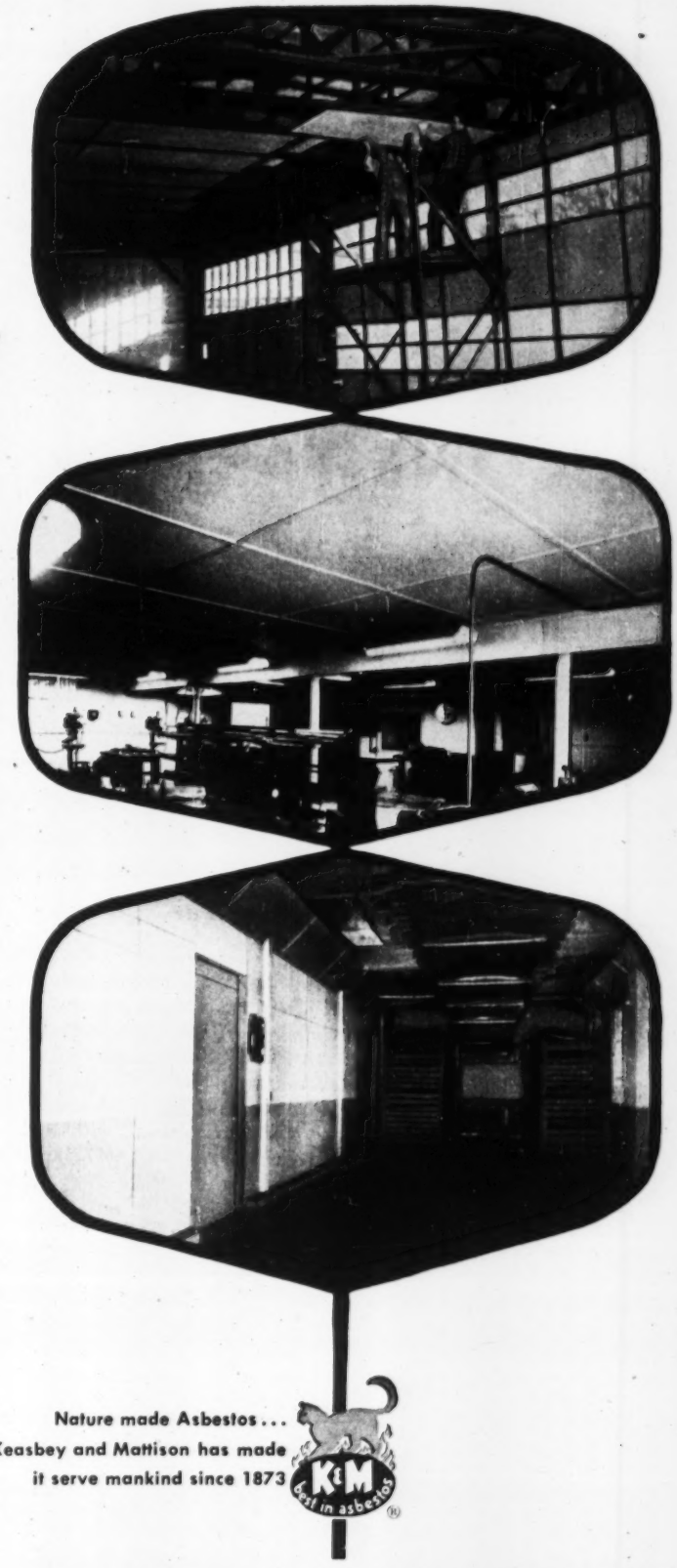
HORSEPOWER **WITH A PEDIGREE**

INSIDE OR OUTSIDE,
WALLS OR CEILINGS

the smart buy is

"Century" APAC

asbestos-cement sheets



Here's the kind of building economy you can't afford to pass up! "Century" APAC sheets offer you the means to low-cost, trouble-free walls and ceilings on almost any type of building or structure.

These light, easily-handled sheets are made from portland cement and mineral asbestos. They will not burn, rot, or corrode, and they are impervious to insects and vermin. They take decorative colors well, although they never need paint for protection—indoors or out.

Rooms finished with "Century"APAC sheets are clean, attractive places in which to work. Structures sided with this versatile material have a trim, modern, efficient look. Best of all they *stay* that way, for "Century" APAC needs virtually no maintenance—ever!

Your K&M distributor can tell you more about this product and the other types of "Century" asbestos-cement sheets. See him soon! Or write directly to us.

Nature made Asbestos... Keasbey and Mattison has made it serve mankind since 1873

K&M best in asbestos

KEASBEY & MATTISON

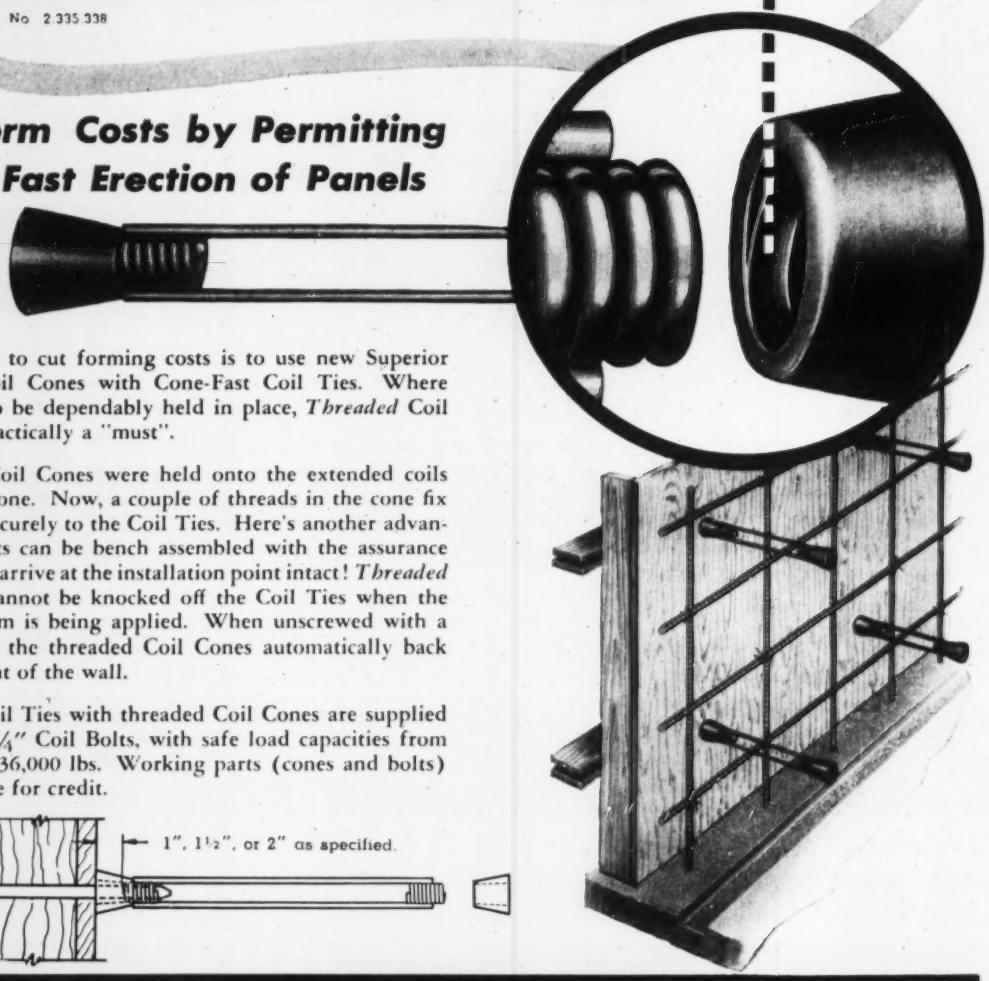
COMPANY • AMBLER • PENNSYLVANIA

NEW!

THREADED CONES for SUPERIOR CONE-FAST COIL TIES

Pat No 2,335,338

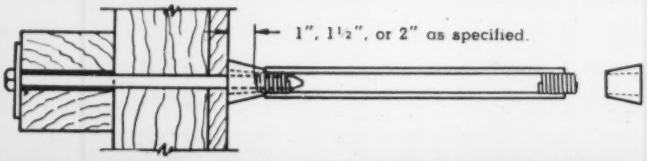
Cuts Form Costs by Permitting Extra Fast Erection of Panels



A direct way to cut forming costs is to use new Superior *Threaded* Coil Cones with Cone-Fast Coil Ties. Where cones have to be dependably held in place, *Threaded* Coil Cones are practically a "must".

Previously, Coil Cones were held onto the extended coils by friction alone. Now, a couple of threads in the cone fix Coil Cones securely to the Coil Ties. Here's another advantage . . . units can be bench assembled with the assurance that they will arrive at the installation point intact! *Threaded* Coil Cones cannot be knocked off the Coil Ties when the opposing form is being applied. When unscrewed with a cone wrench, the threaded Coil Cones automatically back themselves out of the wall.

Cone-Fast Coil Ties with threaded Coil Cones are supplied for ½" to 1¼" Coil Bolts, with safe load capacities from 5,000 lbs. to 36,000 lbs. Working parts (cones and bolts) are returnable for credit.



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4110 Wrightwood Avenue, Chicago 39, Illinois

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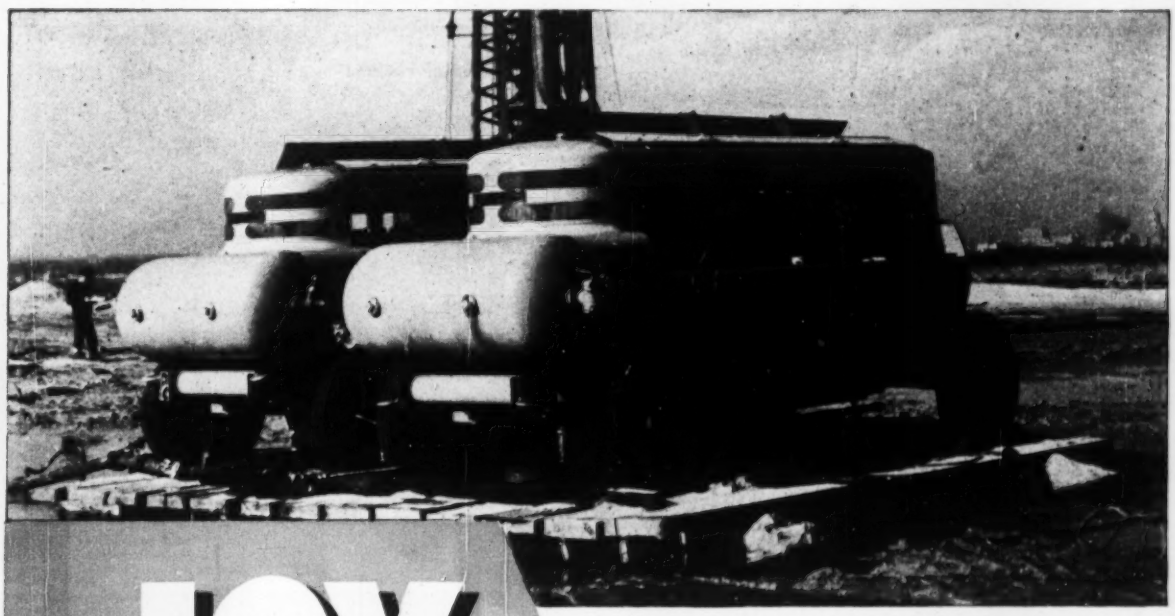
Here's the BIGGEST Portable!

Gives you 5% MORE AIR THAN ANY OTHER ON THE MARKET



JOY "630"

The Joy "630" is a *big* portable—output is 630 CFM—but it's designed for real portability. Light in weight, compact and rugged, the "630" is actually smaller than many other units of less capacity.

The Joy "630" is a completely self-contained compressed-air plant. Electric starter, full force-feed lubrication, "Cascade" oil cooling, two-stage compression, and many other advanced engineering developments enable it to out-produce all others. You'll find the Joy "630" a bear for work—it will operate *two* 4" wagon drills—and you'll find it able to cope with your heaviest air requirements. ● Write for Bulletin GG-1P. **Joy Manufacturing Company, Oliver Bldg., Pittsburgh 22, Pa.** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

W&D C4633

Consult a Joy Engineer

JOY

CONSTRUCTION EQUIPMENT MANUFACTURERS FOR OVER HALF A CENTURY

51 "Eucs" WORKING AT FOLSOM DAM

Fifteen and a half million cu. yds. of earth and rock are being moved for construction of Folsom Dam on the American River near Sacramento, Cal. This big irrigation, flood control and power project is being built under the supervision of the Corps of Engineers and the U. S. Bureau of Reclamation.

As on hundreds of other tough jobs, Euclid equipment is helping to keep the earth moving work on schedule. Contractors for the dam, Merritt-Chapman & Scott Corporation and Savin Construction Company are using 4 Euclid Twin-Power Scrapers, 15 Rear-Dump "Eucs" of 22 ton capacity, 16 Bottom-Dumps carrying heaped loads of 30 cu. yds., and a Euclid Loader. Guy F. Atkinson Company is using a total of 15 "Eucs" for power house excavation and building an access road.

The high production and cost cutting features of Euclid equipment can pay off for you just as they are for the contractors at Folsom Dam. Ask your Euclid Distributor for facts and figures . . . he has a new catalog on the complete line of Euclid equipment for you . . . just ask for Form 325.

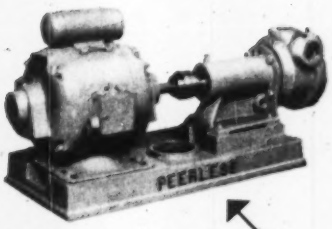
The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

Cable address: YUKLID **Code: BENTLEY**

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

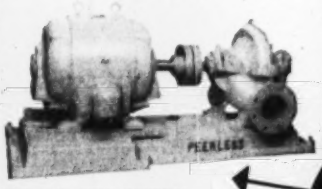
For all your Pumping Problems



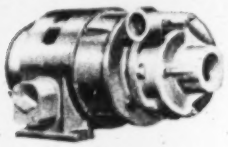
TURBINE VANE TYPE PUMPS—For pumping hot and cold, clear and vaporous liquids. Close- and flexible-coupled types. Standard and self-priming models.

HOT WATER CIRCULATING
CHILLED WATER CIRCULATING
LOW PRESSURE WATER HANDLING
HIGH PRESSURE PUMPING
BOOSTER PRESSURE SYSTEMS
WATER SUPPLY AND TRANSFER

You can
DO A BETTER JOB
with these *Dependable*
PEERLESS
PUMPS



TYPE AS—NEW GENERAL PURPOSE SPLIT-CASE PUMP—Modern design and construction. Designed with and for a mechanical shaft seal. Sizes: 1½ through 4 inches. Capacity: up to 750 gpm. Heads: up to 230 ft.



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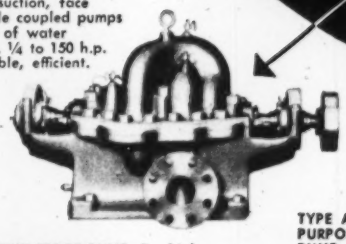

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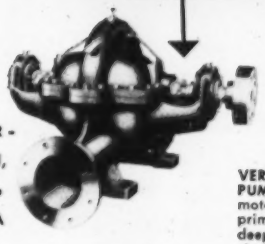

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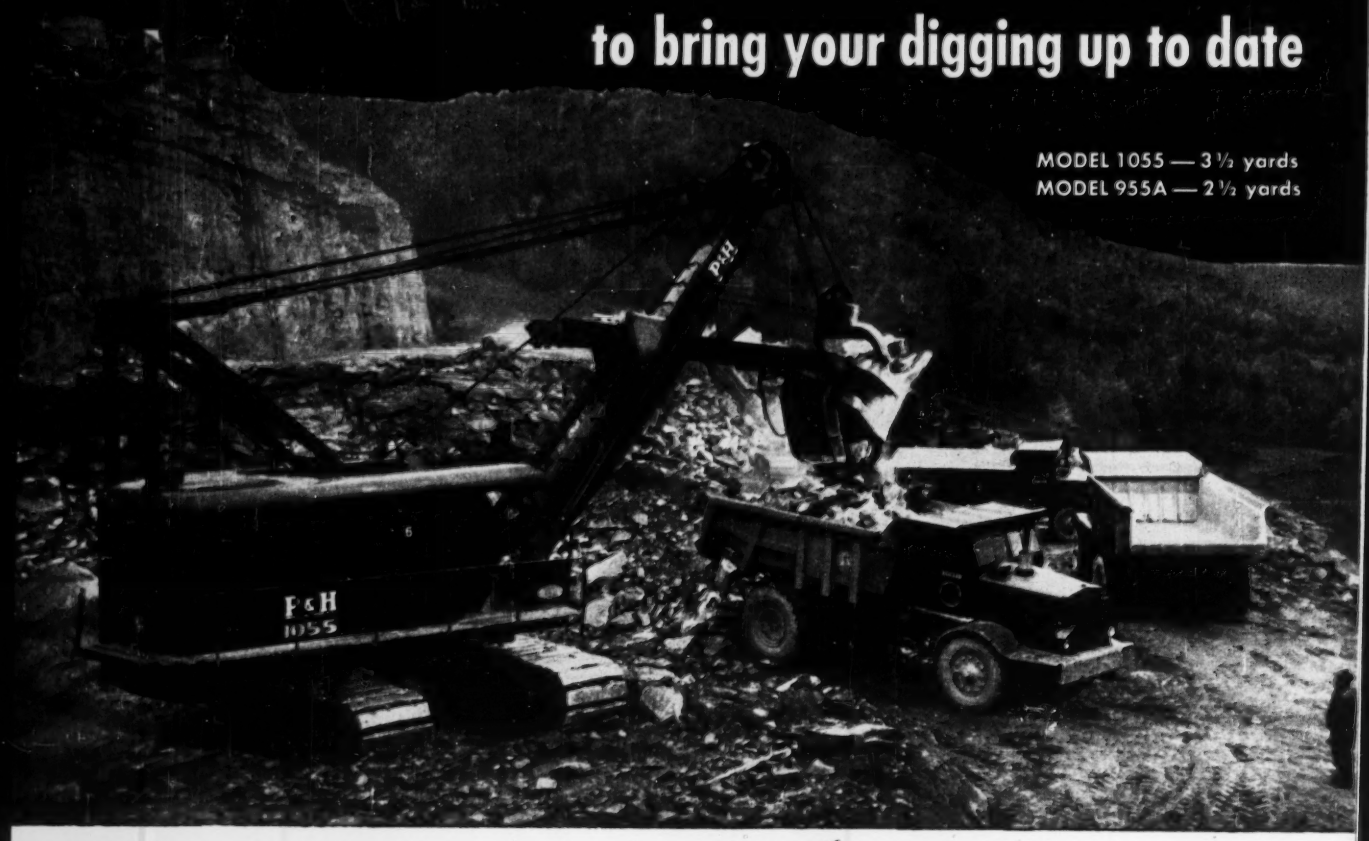

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READER COMMENT

Textbooks on soil wrong?

SIR: Your Editor's Note (ENR June 4, p. 10) quotes two references. These were interpreted by the author of the article, "Bigger soil test plate permits bigger pressures under footings," (ENR April 16, p. 51) to mean that on noncohesive soils a 2-ft square plate was expected to settle nearly as much as a 4-ft square plate under the same unit pressures. No supporting numerical data are given in these two references. The following data should therefore be noted:

Laboratory tests with circular footings up to 3 ft in diameter (on sand) have shown that the settlements under a given unit pressure increase linearly with the increase of diameter. Thus Kögler and Scheidig (BAUGRUND UND BAUWERK, 2nd Ed., Berlin, 1939, Ernst & Sohn, p. 116, Fig. 119) report that during a typical test series on compact sand, under a load of one ton per square foot:

1-ft dia plate settled 0.17 in.
2-ft dia plate settled 0.22 in.
3-ft dia plate settled 0.28 in.

Field tests on compact sand gave similar results. Figs. 121 and 122, p. 117, *loc. cit.*, show that under a load of three tons per square foot:

Circular plate, 0.75 feet diameter, settled 0.1 inches.

Rectangular plate, 3.3 feet square, settled 0.2 inches.

Foundation 23.2 feet square, settled 0.6 inches.

Summarizing much other experimental data, Kögler and Scheidig state on p. 117, *loc cit.*: "The larger areas on the same soils and under the same unit pressures show, without any exceptions, larger settlements than the smaller areas."

Of course, the data given above indicate that for large footings the settlement on sand soils does not increase in a linear proportion with the diameter of the footing, as it does for clay soils. Terzaghi and Peck (SOIL MECHANICS IN ENGINEERING PRACTICE, John Wiley & Son, 1948, p. 422) have attempted to express this relationship by a parabolic curve, which suggests that on sand the settlement of an infinitely wide footing will be 4.0 times greater than that of a footing one foot wide. According to their diagram, the settlement of a 4-ft square footing should be approximately 50% greater than the settlement of a 2-ft square footing under the same unit pressure.

The writer believes that the above relationships may be approximately

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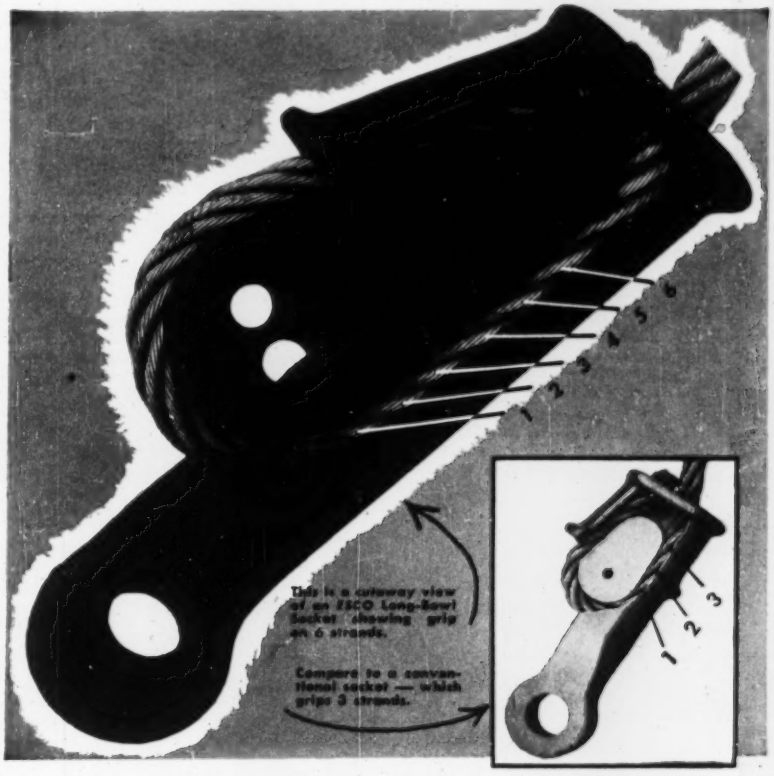
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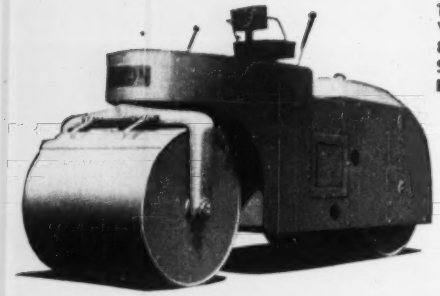

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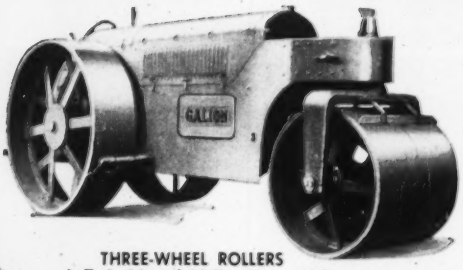

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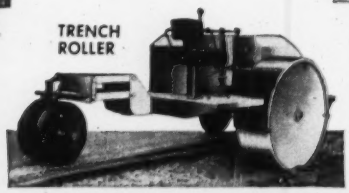

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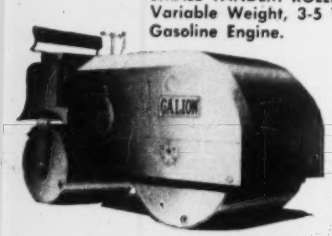

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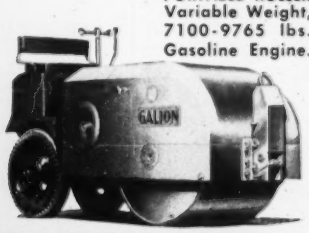

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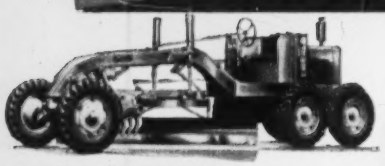

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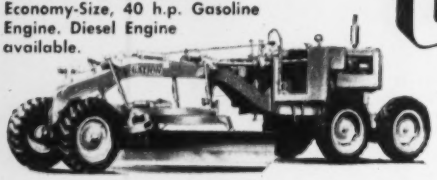

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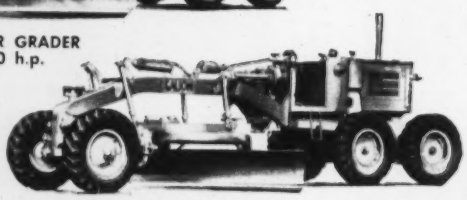

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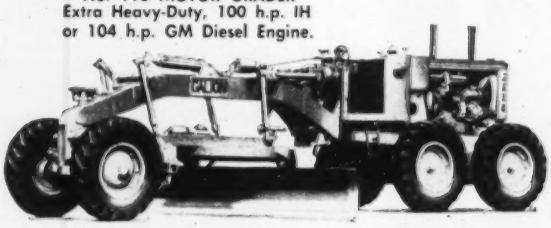

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correct in the case of dense sands. However, his own records indicate that for loose sands a much greater rate of increase of settlement with the size of the area is to be expected. Thus, a 90 x 100-ft structure (Tschebotarioff, SOIL MECHANICS, FOUNDATIONS AND EARTH STRUCTURES, McGraw-Hill, 1951, p. 232) settled 3.5 in. or 9.7 times more than the 0.36 in. of a 2-ft square footing under the same unit pressure of 3.7 tons per square foot.

Thus, both laboratory and field experiments contradict the interpretation given to the possible ambiguous wording of the two references quoted on p. 12 of your June 4 issue.

GREGORY P. TSCHEBOTARIOFF
Professor of Civil Engineering
Princeton University

Experience with tornadoes

SIR: The recent tornado disasters bring to mind the neglect of needed provisions in almost all building codes, including the new national model codes.

My personal experience in the August, 1938, Charleston, S. C., tornadoes, and the January, 1950, Camp Carson, Colo., windstorms (80 mph) has been that practically all conventional good-class wood-and-brick building construction is almost entirely lacking in adequate wind resistance. Only earthquake-designed reinforced concrete or steel structures show adequate wind resistance when tested.

A Charleston 3-story load-bearing brick wall building, with interior wood posts and framing, first swelled out from interior air pressure during the tornado vacuum, pulling the wood loose from the brick, then collapsed inward killing seven occupants. . . .

This is a typical example of lack of adequate member connections against tension upward or laterally.

Subsequent analysis of both of these showed that a design requirement of 30 psf against lateral or upward section or pressure would insure a tornado-safe design at almost no additional cost. All that is required are a few metal straps or anchors lapping over the supporting member connections.

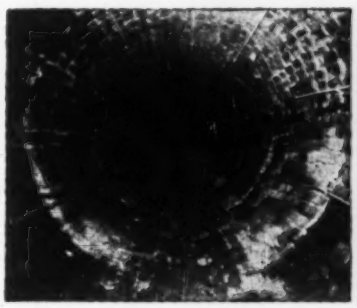
H. G. GERDES
Denver, Colo.

CALENDAR

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., June 28-July 3.

Summer program in Advanced Strength of Materials, M.I.T., Cambridge Mass., July 6-17.

City and regional planning programs, M.I.T., Cambridge, Mass., Aug. 21-Sept. 4.



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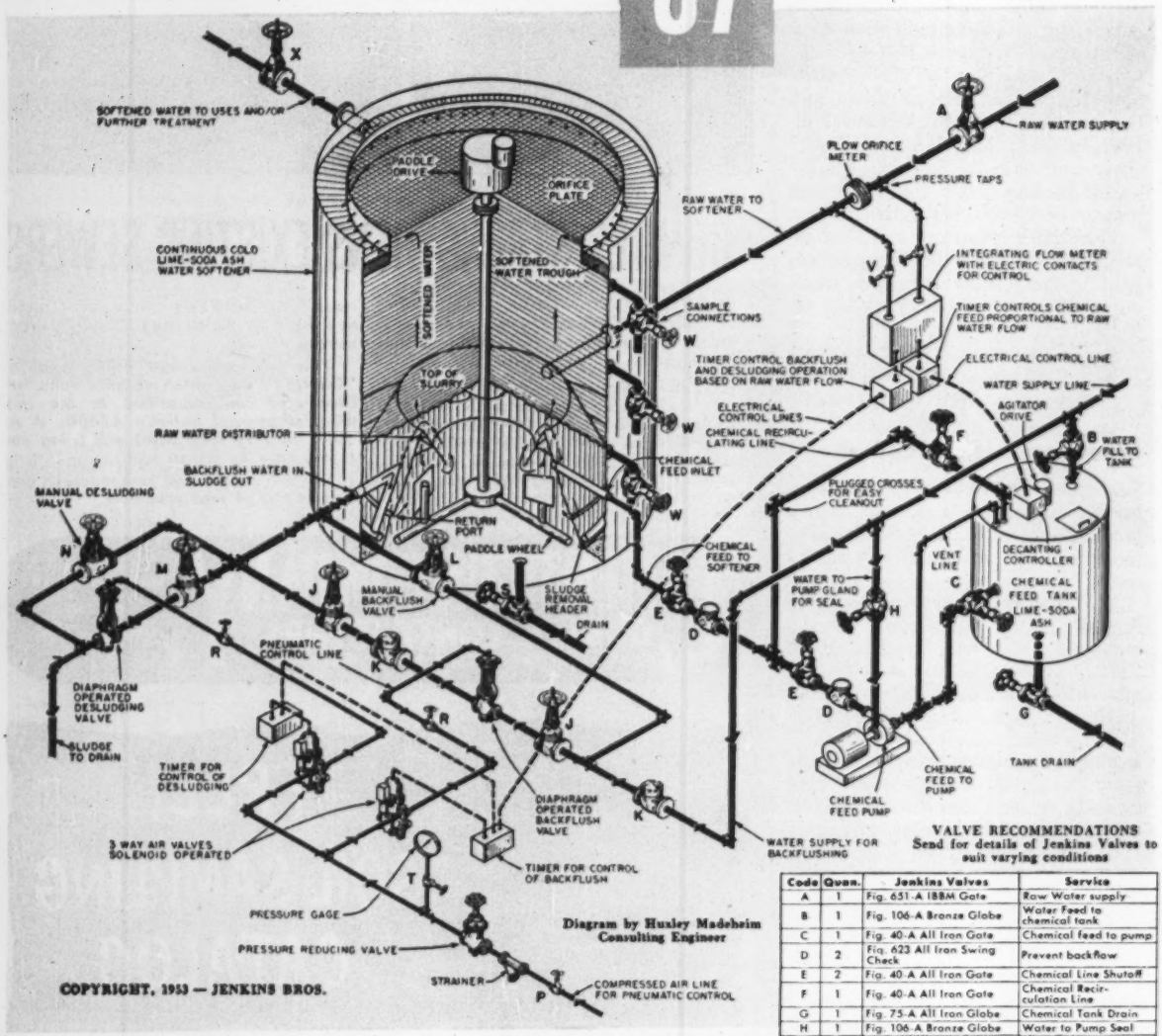

Diagram by Huxley Madeheim Consulting Engineer

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B	1	Fig. 106-A Bronze Globe	Water Feed to chemical tank
C	1	Fig. 40-A All Iron Gate	Chemical feed to pump
D	2	Fig. 623 All Iron Swing Check	Prevent backflow
E	2	Fig. 40-A All Iron Gate	Chemical Line Shutoff
F	1	Fig. 40-A All Iron Gate	Chemical Recirculation Line
G	1	Fig. 75-A All Iron Globe	Chemical Tank Drain
H	1	Fig. 106-A Bronze Globe	Water to Pump Seal
J	2	Fig. 651-A IBBM Gate	Backflush Valve Shutoff
K	2	Fig. 624 IBBM Swing Check	Prevent Backflow
L	1	Fig. 142 IBBM Globe	Manual Backflush Valve
M	1	Fig. 651-A IBBM Gate	Desludge Valve Shutoff
N	1	Fig. 142 IBBM Globe	Manual Desludge Control
P	1	Fig. 106-A Bronze Globe	Compressed Air Line Shutoff
R	2	Fig. 106-A Bronze Globe	Pneumatic Control Line Shutoffs
S	1	Fig. 100 All Iron Gate	Softener Tank Drain
T	1	Fig. 741-G Bronze Needle	Pressure Gage Control
V	2	Fig. 741-G Bronze Needle	Flowmeter Pressure Tap Shutoffs
W	3	Fig. 75-A All Iron Globe	Sample Takeoffs

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In constant circulation, the mixture of water and precipitate first rises through the mixing zone, then flows down around the outside cone to reenter the mixing zone via a return port. A small portion rises through the slurry to the top and enters the softened water trough for further treatment or use. Larger, denser masses of precipitate drop down to be removed by the desludging system, which automatically loosens up the compacted sludge and drains it off for a predetermined length of time.

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- **Nuclear power—right now?**—The way to get nuclear power out of the science-fiction class into practical use is to go ahead, as soon as may be, with actual construction of a full-scale plant. And that's no science-fiction, but the sober opinion of T. G. Leclair, manager of engineering for Chicago's Commonwealth Edison Co., soberly presented in a paper delivered to the American Institute of Electrical Engineers.

  Fact for construction men: Such a plant—to use now-known techniques for producing power—would cost something like $78 million (for a 211,500-kw plant) or roughly $370 per net kw of installed capacity.

- **Facts note**—There are four points in the Washington news worth pasting on the desk-slide for reference:

  1. Up to the middle of May, said the Bureau of Labor Statistics, construction employment had risen by 78,000 (to 2,480,000)—for what BLS said was the smallest rise reported for this time of year since 1945.

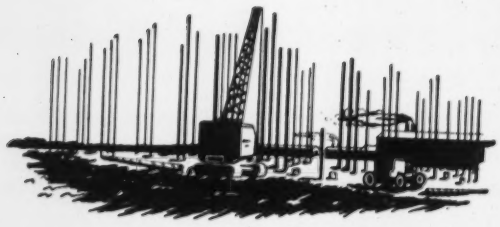
  2. The Commerce Department began work to convert its National Production Authority from an emergency controls agency to a permanent "business service agency" that will include a construction division to act as a "friend of industry" in dealings with government.

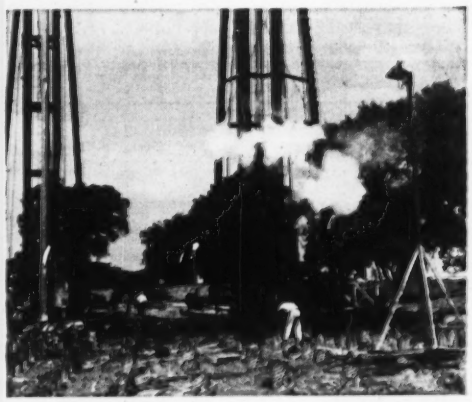
  3. It might be worth watching Agriculture—which has ordered more storage space for grains. That may mean construction.

  4. The House Judiciary Committee was informed that the Federal Trade Commission had changed its attitude toward basing point systems of pricing by business. Said FTC: A majority of the commissioners are agreed that it is not an unfair practice for sellers, acting independently and in good faith, to meet the equally low price of a competitor—or to sell at delivered prices and absorb freight charges.

- **Licensing drive slowed**—The National Society of Professional Engineers looked into engineering practice by corporations and found divergences of opinions that seemed to slow a drive to place the parent organization's weight behind a campaign of the New York Society (ENR March 12, p. 21).

  Occasion was NSPE's 19th annual meeting at Daytona Beach—in effect a board of directors' meeting. Disagreement over the right of corporations to practice engineering (the New York group says they shouldn't and has laws to support its position) was hinted in the first day's session, when the board voted, significantly, to "receive," rather than "approve" the report of its committee on registration. A section of the report urged laws similar to New York's—and a board spokesman cited this section as his reason for avoiding the use of "approve" in describing the board action on the whole report. The whole question was referred to a special committee for further study.





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With either type of Armco Foundation Pipe you can save money by specifying what you need and by on-the-job welding of salvaged lengths. Write for complete details. Armco Drainage & Metal Products, Inc., 3843 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO FOUNDATION PIPE

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The fight for easing FHA-insured mortgage terms still goes on, despite the Administration's solid front against any such easing at this time.

The new goal of the builders is standby authority for the President which would permit him to put the lower downpayments and longer maturities into effect if and when they would be needed to maintain housing starts.

•

A hard pitch for the proposed new FHA insurance schedules was made by builders last week before both House and Senate Committee (See also p. 83).

Senate Banking Committee approved easier FHA terms Monday by tacking them onto the Administration bill now before it.

But chances for getting these provisions through Congress are slim. The Administration is against them, and congressmen aren't convinced easier housing credit is necessary. They go along with the Administration theory that the money market will improve enough to take care of housing credit needs.

•

Reversal of a VA order on discounting GI mortgages isn't expected, despite the urging of the House Veterans Affairs Committee. Present chief Carl Gray goes out of office next week, and isn't likely to revoke the order of May 18. If he lets things stand, then it will be up to Eisenhower's VA boss—whoever he turns out to be—to make the decision.

•

Government officials are sticking by their tight money policy as the right thing to do to keep the business boom under control. They still want to see big borrowing delayed—such things as the postponement of the $96-million Mackinac, Mich., Bridge bond issue (p. 25).

Actually, Federal Reserve Board activity has eased interest rates somewhat. There has been a moderate drop in the rate the Treasury had to pay for 91-day bills, and the price of long-term bonds has moved up a bit, too, with a consequent drop in the effective yield.

But FRB officials say these are temporary operations designed to ease a tight seasonal situation, and to allow for "normal growth of the economy."

•

Important business groups—home builders, for example—are demanding easier credit. So the FRB may well have decided to roll a bit with these punches, and increase the availability of credit a little more than either seasonal needs or natural growth required. At least, the money market decided this was what the FRB did—hence the decline in the interest rate on Treasury bills offerings the past three weeks.

There may be some politics in it, too. Democrats have been blasting the hard money policy as "economic murder" of small businesses. So reserve officials are rolling with the punch—easing things a mite more than they would otherwise.

•

A big water diversion project in Colorado is getting Administration backing. It's the $173-million Frying Pan-Arkansas River System to take water from the Frying Pan River through the Continental Divide to the eastern slope. The project has bi-partisan support in Congress, and Secretary McKay is adding his support. Money for the project won't be sought until next year.

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TITLE_____

STREET_____

CITY_____ STATE_____

Wide World Photo

ROBERT MOSES—$25,000.

LACEY V. MURROW—$10,000

CLAUDE A. ROTHROCK—$5,000.

Old highway hands win top prizes in GM contest

Robert Moses, Lacey Murrow and Claude Rothrock are one, two, three for their essays on how to plan, pay for highways

In awarding the prizes in the great General Motors Corp., essay writing contest on how to plan and pay for the safe and adequate highways we need, Paul Garrett, vice president and public relations director of the company noted that it would be exciting and spectacular if he could announce that "a housewife had won top honors for a hitherto unthought of suggestion that would solve all our highway troubles."

But the facts of the contest—as well as the facts of life—ruled against any such dream. Just as blood tells in race horses—or experience in golfers—so experience in wrestling with the highway dilemma proved a deciding quality, and three lifetime practitioners of the highway art came off with the top three prizes.

Robert Moses, the nation's "Mr. Parkways" and New York City's and State's quarter-century incumbent of multiple-highway administrative jobs won first prize and $25,000.

Brig. Gen. Lacey V. Murrow, one-time Washington State highway engineer and now director of competitive transportation for the Association of American Railroads, was awarded the second prize of $10,000.

The third prize of $5,000 went to Claude A. Rothrock, chief of the planning division of the West Virginia Roads Commission.

The fact that the essays of such a threesome were deemed best also mirrors the competence of the judges as well as the painstaking care they applied to their task. Not until their decisions had been rendered did the judges know any of the authors by any designation but a number. Mr. Moses was No. 13.

But this careful analysis by the judges also brought other essays to the top that reflected sound thinking on the highway problem by other than the lifelong experts. In this respect the results proved one of General Motors' original beliefs—that people in all walks of life were deeply concerned with our inadequate highways, and that more would be if their thinking could be stimulated.

The total of over 44,000 entries in the essay contest is one measure of the stimulation furnished by the contest, whose total prize winners, including state winners still being announced, will add up to 162 who will garner a grand total of $194,000 in prize money.

In his prize-winning essay, Mr. Moses sets $50 billion as the amount required to bring our highways up to

Other winners

National honorable mentions—$3,000

William E. Willey (highway economist)
Phoenix, Ariz.

David C. Guilbert (auto executive)
Spokane, Wash.

William F. Steuber, Jr., (engineer)
Madison, Wis.

Regional Awards—$2,500

Russell E. MacCleery (farmer)
North Chichester, N. H.

John J. Ryan, (Army public relations)
West New York, N. J.

Austin F. Bennett (investment banker)
Detroit, Mich.

Forst Lowery (safety executive)
Minneapolis, Minn.

Lewis W. Waters, Jr. (plant manager)
Asheboro, N. C.

Ned Williams (professor of economics)
University, Miss.

Walter L. Pope (lawyer)
Little Rock, Ark.

Albert Erickson (newspaper publisher)
Helena, Mont.

Bryant Hall (city planner)
San Francisco, Calif.

The Moses plan for better highways

1. Proceed on established, orthodox lines.
2. Give urban highways most emphasis and more money.
3. Focus on a 10-year program of double the present scope.
4. Accept the fact that:
   a. 6-lane parkways in urban areas cost up to $3 million per mile.
   b. 6-lane expressways and service roads cost up to $10 million per mile.
   c. 2-lane highways cost over $100,000 a mile.
5. Increase advance planning and research.
6. Expand power and influence by U. S. Bureau of Public Roads.
7. Make long approaches a part of toll crossing projects.
8. Build toll roads where necessary, and supplement their revenue bond financing with as much as a 25% federal and state subsidy when needed.
9. Use the public authority idea more extensively.
10. Forget the excess condemnation idea on grounds of inadequacy and danger.
11. Raise $5 billion a year (twice present expenditures) for 10 years by:
    a. Raising gas taxes in some states.
    b. Increasing truck taxes by ton-mile method.
    c. Using more bonds to capitalize gas tax revenues.
    d. Raising federal gas tax to 3 cents from present 2 cents.
    e. Using federal gas tax and 6-cent oil tax to double federal aid.
12. Distribute federal aid according to a new formula.*
13. Make elimination of railroad grade crossings a highway responsibility.
14. Use parking meters widely to discourage parking and raise revenue.
15. Make inside parking facilities mandatory for new structures.
16. Supplement private with public parking facilities.
17. Cut down road speeds.
18. Reduce maximum sizes and weights of trucks and taxicabs.
19. Eliminate billboards.
20. Get general agreement of all elements affected, including the general public, on a balanced, concerted program.

* Proposed new federal aid distribution

	Present Federal Aid	Revised Federal Aid
Primary	$247,500,000 (45%)	$440,000,000 (40%)
Secondary	165,000,000 (30%)	275,000,000 (25%)
Urban	137,500,000 (25%)	385,000,000 (35%)
	$550,000,000[1]	$1,100,000,000[2]

[1]Does not include congressional authorizations for interstate system, defense access roads, forest highways, and other special purposes.
[2]Includes federal aid for off-street parking and railroad crossing eliminations.

The Moses financing proposals

	Per Year (millions)	Ten Years (millions)
Double present federal aid to the states, the income to be derived from segregation of a 3-cent federal gas tax plus the present 6-cent per gallon tax on oil	$1,250	$12,500
Raise average gas tax in 48 states ½-cent to increase highway user revenue $3,450 million.		
Deduct from this amount $1,400 million annually, representing average of 2 cents of gas tax and half of registration fees, capitalize and issue bonds		23,300
Remainder of state highway user revenue	2,050	20,500
Construct 4,000 miles at $1.2 million per mile with revenue bonds of public authorities		4,800
Municipal government expenditures to	1,200	12,000
		$73,100
Less maintenance and administration	2,310	23,100
CONSTRUCTION TOTAL	$5,000	$50,000

adequate standards—and he allows ten years to do it at an annual expenditure of $5 billion, just about double present annual rates. Such a program would, in his opinion, fit us to cope with the 10,000,000 more cars and 3,000,000 more trucks and buses that will be operating in 1963. After that, he estimates that an annual expenditure of about what we are spending today—$2.7 billion—would keep the highway system abreast of needs.

Mr. Moses proposes to raise and spend $5 billion a year for five years through a comprehensive plan:

"It would be pleasant if this problem could be solved by some inventor working in an obscure laboratory or office working with an entirely new formula, recipe, sleight-of-hand device or alchemy, a unique amalgam of ingenious materials, methods, economics and budgeting, immediately recognized by experts and instantly accepted by the public. In such contexts, the talented amateur, unhampered by experience or responsibility, dreams of a device which at one stroke through one central agency can finance and build, without prolonged debate, stultifying compromises and division of authority, a country-wide program and guarantee its early completion. Even if such a solution were theoretically possible, it would involve so many dangers and bad precedents, so much concentration of power, so manifest a violation of states rights, local home rule and representation, that it would never get beyond the paper and prospective stage. Democracy, as we practice it, is a tedious and irritating business not to be confused with Russian five-and ten-year plans based on forced labor and liquidation.

"Nothing much, therefore, will come from wishful thinking and oversimplification. It is much more likely that the answer for the next decade at least will be a concerted, unremitting attack on established, orthodox lines."

Hewing to these orthodox lines, Mr. Moses, nevertheless, cuts some controversial chips. They are all listed in the adjacent column.

General Motors contest judges

Ned H. Dearborn
President, National Safety Council

Thomas H. MacDonald
Former Commissioner, U. S. Bureau of Public Roads

Curtis W. McGraw
Chairman of the Board, McGraw-Hill Publishing Company

Dr. Robert Sproul
President, University of California

B. D. Tallamy
Superintendent, New York State Department of Public Works

State highway departments fall short of engineering personnel needs by 15%

ENR survey shows how low salaries, slow promotions aggravate problem; use of high school grads widens

School was out across the nation last week and the engineering profession had harvested 1953's all-too-scant spring crop of new graduates. Among employers of civil engineers, state highway departments looked most longingly at the newcomers, yet succeeded in hiring very few.

The engineer shortage, felt throughout construction, but most critical in the highway field—critical in view of plans to spend a record $2.2 billion on roads this year (ENR Mar. 19, p. 21)—last week shaped up about like this:

- The 48 state highway departments need roughly 15% more engineers than they have.
- Low pay is the nearly universal reason for shortages.
- A 15% average pay increase for most classifications would solve the whole problem—hold the men they have and attract the men they need.
- Such pay boosts would in the majority of states add fractional percentages to the present highway budgets.

These broad conclusions can be drawn from responses to an ENR survey just completed. The purpose of the survey was to find quantitatively just how bad the long prevalent and frequently reported highway engineer shortage really is.

• Salary problem—Figures in the table speak for themselves. The highway engineer shortage is bad, or not so bad, depending on what columns you read. It's bad when you read how many more men each responding state needs, and how in most cases the salaries paid can't command these men. It's perhaps not so bad when you read further that the men on whom the nation's sorely needed highway improvement program rests could be had for an expenditure of less than 1% more dollars, in most cases.

Of course, it is not quite as simple as all that. Nearly a third of the states report that it would be difficult or impossible to get highway department salaries increased without giving across-the-board raises to all state civil servants.

Then, there is the continuing general engineer shortage to be considered. This factor weighs heavily on highway departments generally because of comparatively low salaries they pay. But as some respondents point out, if they raise pay to meet private industry and industry then goes them one better, nothing has been gained—just as long as the demand for engineers continues to exceed supply.

• Turnover is high—A few states report recent highway department salary increases averaging from 5% to 15%, and most of these believe their problem will ease itself now. Kansas, for example, can now offer $358 instead of $309 per month to new graduates.

In some cases, it will take more than money to attract recent graduates (and it is the recent graduates who are wanted most urgently by nearly every state). It will take improved personnel policies and better chance for advancement in some states, according to their officials. For example, it is not its starting pay that troubles one department, but the relatively low pay higher up—a deterrent to the young man looking for a career.

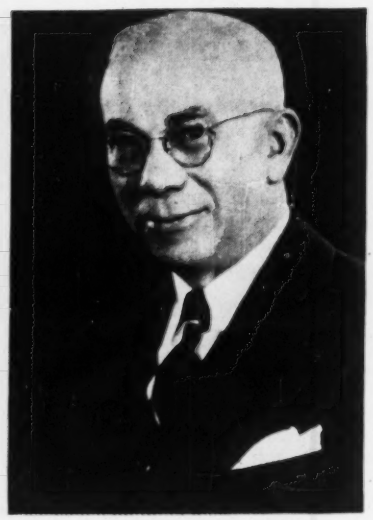
Failure to upgrade professional employees as they gain experience accounts, too, for the heavy losses of trained men to other employers. Turnover in many departments is serious. Ohio, for example, reportedly can expect a 50% turnover of its highway department personnel in 1953 (some of this is due to loss of

HIGHWAY ENGINEERS

Construction's No. 1 personnel problem

State:	Has:	Should have:	Should raise salary scale roughly:	For approximate budget increase of:
Me	170	230	7 to 15%	$120,000 or 1%
Vt.	163	223	6 to 30%	270,000
Mass	1,500	1,600	10%	800,000
R. I	60	100	25 to 35%	50,000
Conn	400	500	.....	.....
N. Y	2,250	2,800	10–15%	1,500,000 or 0.5%
Pa	1,500	1,800	.....	.....
Ohio	600	700	9–14%	1,600,000
Ind	287	330	10%	156,000 or 0.5%
Ill	950	1,200	.....	.....
Wis	380	430	(just raised up to 15%)	.....
Minn	534	590	10%	275,000 or 0.5%
Mo	590	630	10%	0.04%
S. D	65	80	10%	35,000
Neb	482	537	10%	24,000
Kan	304	404	(just raised 15%)	.....
Del	66	75	15%	$96,000
D. C	66	73	10%	28,000 or 0.8%
Va	325	425	15 to 20%	300,000 or 2%
W. Va	90	140	15 to 20%	0.004%
Fla	525	650	15%	750,000
N. C	400	475	.....	.....
Ky	500	600	.....	.....
Ala	400	500	20 to 25%	350,000 or 2%
La	725	740	.....	.....
Okla	600	100	(just raised)	.....
Tex	750	875	7%	$1,120,000 or 0.7%
Idaho	48	63	.....	.....
N. M	200	250	10 to 20%	$300,000 or 1 to 2%
Ariz	60	60	.....	.....
Utah	250	300	15%	$150,000 or 1.5%
Wash	460	525	(just raised 5%)	.....
Ore	813	877	5%	$93,000 or 0.15%
Calif	3,800	4,400	.....	.....

FRANCIS V. DU PONT, Public Roads chief, says consultants ease problem.



CHARLES M. ZIEGLER, AASHO president, sees situation worse next year.

summer employees when schools and colleges reopen).

One point on the engineer totals listed in the table is worth noting: In most cases these totals include engineering personnel in sub-professional grades, generally classified engineering aides by the highway departments. These are not necessarily engineering graduates.

• **High school grads needed**—In fact, a considerable portion of the needs of many states could be satisfied by high school graduates. Connecticut breaks down its need for 100 engineers as 80 recent college graduates and 20 older men with some highway experience; then adds that it also needs 50 high school graduates. Idaho employs only 48 highway engineers who must be registered professionals, and needs but 15 more; yet the state has 270 men in its engineering aide group.

Wisconsin, unable to get all the college men it wants, is beginning to train high school graduates in a 6-week course (math, surveying and drafting) to fill its engineering aide jobs. Vermont will run such a course for a second time this summer. Oregon, Illinois and Massachusetts report little trouble getting useful sub-professionals out of the high schools.

Getting down to the actual pay scales, respondents reported starting salaries as low as $280 per month offered to college graduates (who are commanding an average monthly rate of $340, according to reports this year). This $280 figure, the lowest reported, is only about $40 a month more than other states pay their sub-professionals to start.

California rates among the highest paying states with minimum starting pay for graduate engineers pegged at $376 per month. (California last week announced plans to raise $2.3 billion for highways over the next 10 years.)

• **Consultants can help out**—In the overall, the highway engineer shortage, while critical, should not be damaging to this year's record plans for highway construction across the U. S.

Asked for his opinion, Francis V. du Pont, new Commissioner of the Bureau of Public Roads in Washington, told ENR last week he does not foresee the engineer shortage holding up highway construction or planning programs. "In certain areas and phases, there undoubtedly are shortages that could be called critical," says Mr. du Pont, but he points to the possibility of supplementing state forces with private firms—especially in and near the cities where consulting firms are easy to get. Letting consultants handle the most important projects permits states to avoid building up large engineering staffs that must be carried over the winter, he says.

Charles M. Ziegler, Michigan State Highway Commissioner and current president of the American Association of State Highway Officials, reports that AASHO is "worried because of the engineer shortage." He told ENR:

"I believe that most states will be able to handle their 1953 programs . . . by placing more projects under the responsibility of each field crew. Some might have to farm out work to consultants. Of course, toll road construction is handled mainly by consultants. Additional federal funds may be expected next year, and this will complicate the states' engineering problem further."

More time to talk

Federal contract forms delayed for all agencies

Effective date for new federal contract forms was postponed to Dec. 1 for all government construction agencies last week, following the taking of similar action in behalf of the Defense Department (ENR June 18, p. 24).

This dispensation gives contractors and the General Services Administration five months more to reconcile conflicts in the new documents. And, last week GSA chief Edmund F. Mansure urged managing director H. E. Foreman of the Associated General Contractors and his colleagues to make good use of the time extension for full discussion with the GSA legal staff on points the contractors want changed.

On the disputes clause, Mansure asked AGC to study carefully the new language. In his view, he said, rewording of this clause fulfills the meaning and intent of the dissenting opinions that were given in the Supreme Court's Wunderlich decision (ENR Dec. 6, 1951, p. 25).

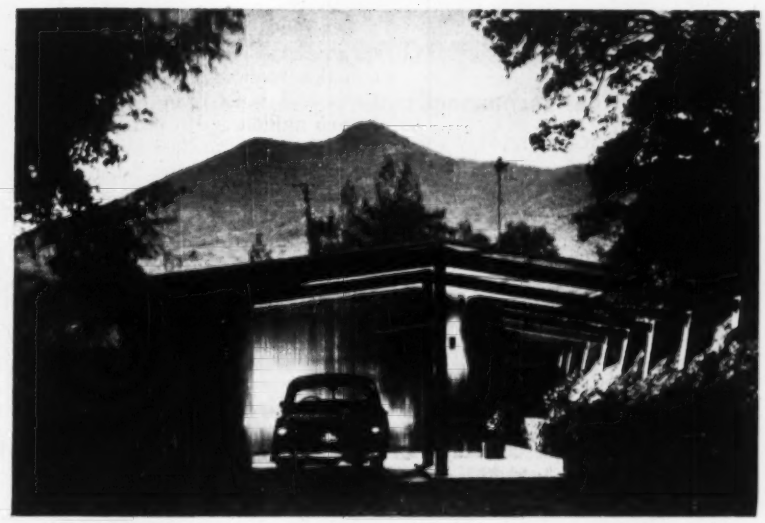
But, AGC counsel still thinks much clearer language is needed to give contractors full rights to court review of disputed decisions under federal contracts.

Congressional observers were betting that the contractors would get the desired legal rights at this session, through enactment of the McCarran Bill. The measure has passed the Senate, and the House Judiciary Committee is expected to report the bill in time for a House vote before Congress adjourns.

Kansas reorganizes highway department

The Kansas state highway department has undergone a reorganization that consolidates 15 non-policymaking divisions into three new sections. According to the state highway commission, the move is intended to "provide a more concise delegation of authority and fixing of responsibility."

A section labeled "surveys, plans and construction" includes the departments of construction, design, materials, right-of-way, county secondary roads and office engineer. An "operation, maintenance and reconstruction" section consists of the departments of maintenance, purchasing, safety, traffic control, and special permits. The "administrative" section covers auditing, radio communications, personnel records and vehicle departments.



ARCHITECT'S CHOICE for a merit award in the AIA 1953 competition is the Gilman house, Kent Woods, Marin County, Calif., designed by G. V. Russel, of Los Angeles.

Architects need broader background for mass-housing design, AIA told

More collaboration with builders urged at convention —developments in sandwich-type materials reviewed

Architects attending the 85th annual convention of the American Institute of Architects in Seattle last week were told bluntly by one of their colleagues that most of them aren't qualified for design work in the development housing field, whose dollar volume was termed the highest in the building industry.

The observation was made by L. Morgan Yost, of Chicago, chairman of the AIA committee on the home-building industry, while serving as moderator of a session devoted to the problems of architects and builders in mass housing.

Yost declared that development housing requires knowledge of manufacturing methods, financing requirements, mass-production building techniques, partial prefabrication, labor relations, and demands of the mass market to a degree not possessed by most architects today. Yet, it is a field to which more architects are turning.

• **Merchandizing stressed**—Edward H. Fickett, Los Angeles architect, who has been responsible for the design of more than 18,000 dwellings in large-scale projects over the last five years, made the point that design of mass housing calls for "merchandizing a product." He said that such projects require more attention to cost, site planning and public reaction than is necessary in designing custom-built houses.

Putting in a good word for the value of architects on large housing projects was the first operating builder to address an AIA convention, Joseph L. Eichler of Palo Alto, Calif.; he said he had consulted with architects "every step of the way" while constructing 1,200 houses in the last three years. "I go to the architect to get a better product more readily marketable," he declared. But, he added, the builder has a right to expect the architect to provide a well-designed home that can be constructed economically.

Development of the builder-architect collaboration theme was in keeping with the current AIA drive to promote improved design of housing projects. The institute has noted that small-home subdivisions, often erected by a builder without the services of an architect, have been rapidly increasing in number since World War II and today account for approximately 600,000 of the nation's million-unit per year home-construction market.

• **Mass-housing materials**—The highlight of discussions on materials for mass housing was a review of developments in "structural-sandwich" panels, by L. J. Markwardt, assistant director of the U. S. Forest Products Laboratory, Madison, Wis.

"The structural sandwich represents the third and final step in the evolution from a building whose structural strength depends entirely upon its framework to one that relies entirely upon the strength of its covering materials," Markwardt declared.

"For the last four years, at Madison, a test structure that consists entirely of sandwich panels made of plywood, fiberboard and metal facings on paper honeycomb cores—walls, roof and floors—has been exposed to the weather. Performance to date has been entirely satisfactory from a structural standpoint, indicating that this type of construction is rapidly ripening for commercial development."

Markwardt called attention to the fact that sandwich panels generally similar to those under test are now being manufactured, notably for light interior partitions in office buidings. "The sandwich has much to recommend it for housing uses besides its inherent strength and stiffness," he said. "Core materials have good insulating value if properly designed. The panels are light in weight, rapidly handled and shipped, and obviously a factory-built product. And the materials for cores and facings are widely available in large volume."

O. Harry Schrader, Jr., executive vice-president of United States Plywood Corp., reported that his company is currently conducting experiments on a sandwich-type panel that will have a thickness of 2 in. to 2½ in. The core will consist of a resin-impregnated paper honeycomb, and the faces either of standard-grade three-ply Douglas fir panels or panels with decorative possibilities.

Mackinac Bridge bond issue is postponed

A disinterested bond market has set back the Mackinac Bridge project for at least one year (ENR March 12, p. 25). B. J. Van Ingen & Co., Inc., the New York investment firm handling the $96-million revenue bond issue, dropped efforts until a more favorable market prevails.

The underwriters blamed the postponement on "a record volume of tax-exempt offerings scheduled for sale in the next 30 days coupled with the weakness of general bond market conditions."

Thus, the entire 1953 construction season has been lost, regardless of any future success in selling the bonds. The investment firm said it would offer the bonds later.

Prentiss Brown, chairman of the Mackinac Bridge Authority, said all contracts would be reopened and financing plans would be revised.

Economies in federal construction programs now face test in Senate

Upper chamber appropriations committee recommends slight increases; House holds line on cutbacks

Construction funds were headed for a big test in Congress this week. The question was whether the Senate would hold the line on cutbacks on public works funds imposed by the Administration and the House, or whether it would yield to pressure for more money for "pork barrel" projects.

The Senate was scheduled to take up the Interior bill first and then move to civil functions. The Interior bill contained a number of increases over the $406 million approved by the House.

The Senate Appropriations Committee had increased the amount for reclamation projects from the $108 million allowed by the House to $123.6 mililon. In addition, there also was available to reclamation construction a carryover of $39 million.

• **Alaska project increase**—A big chunk of the Senate increase came from the $8.5 million allowed for the controversial Eklutna hydroelectric project in Alaska. A work stoppage had been threatened on the project because expenditures were nearing the $20.3-million authorized ceiling imposed by the House. Up until last week the House Interior Committee had steadfastly refused to increase the authorization, but after the Senate committee approved an increase in authorization to $33 million, the House committee followed suit.

The Senate committee also increased funds for Bonneville Power Administration construction $5.9 million to $44.2 million over the House figure. It cut Alaska public works $4.3 million from the $14.3 million voted by the House and increased Alaska road construction $4.6 million over the $10 million allowed by the House.

On the civil functions bill, due to reach the Senate floor near the end of the week, considerable pressure is expected to increase the $250 million allowed by the House for rivers and harbors and flood-control construction. This represents barely half of the amount asked in the Truman budget and compares with the $565.9 million voted by Congress last year. Senate action on this bill poses one of the stiffest tests for the new Administration's economy policy.

• **House stands by cuts**—On the House side last week, the leadership beat off attempts to increase funds for Atomic Energy Commission, Tennessee Valley Authority and Veterans Administration construction. The House approved the same figures voted by its appropriations committee in approving the $5.2-billion second Independent Offices appropriation bill.

The final figures from the House on AEC, TVA, and VA were under the Truman proposals, but the same as the Eisenhower requests. Although the House allowed only $166 million for atomic energy plant construction, the fund has a carryover of $533 million, which will provide a total available of $699.6 million. The main component is $542.6 million for facilities for source and fissionable materials, while the remainder goes for facilities for weapons, reactor development, community, medical, and administration.

Construction will get $160.5 million of the $188 million voted for TVA. This will provide for continuing all 34 power units now in various stages of construction, but at a retarded rate. The House allowed $17.8 million for two new steam plant units at Kingston and at John Sevier plants. The House upheld the Administration decision to deny $30 million for a new plant at Fulton in the Memphis area.

On funds for Agriculture Department, the Senate increased two construction requests. It increased forest roads and trails from $13.5 million to $16 million and raised Rural Electrification Administration loan funds $32.5 million over the $215 million voted by the House.

Akron mayor confirmed for public housing post

Appointment of Charles E. Slusser, Mayor of Akron, Ohio, as new Commissioner of the Public Housing Administration received Senate confirmation last week. He will take over the post from John Taylor Eagan early next month.

Slusser fits perfectly into the Eisenhower philosophy of government. He takes the middle course on public housing, declaring that the government must subsidize decent dwellings for low-income families—but that each community must decide for itself whether it wants public projects.

After service overseas in World War II, Slusser studied engineering and became construction superintendent for the Firestone Tire and Rubber Co. Zeppelin hangars, among other structures, were built under his direction. Since 1930, he has operated an insurance and real estate business in addition to serving as liberal Republican mayor of normally Democratic Akron.

D. V. Terrell nominated as next ASCE president

Daniel V. Terrell, dean of the College of Engineering at the University of Kentucky, was selected as the official nominee for president of the American Society of Civil Engineers at the society's meeting in Miami Beach last week.

Dean Terrell served the society as a vice president in 1951-52. He is a native of Kentucky and a graduate of the University of Kentucky, where he has been teaching since 1918. He also served as testing engineer and research engineer for the Kentucky State Highway Commission from 1915 to 1931.

The Board of Direction of the society announced the election of four members to honorary membership. They are O. H. Ammann, consulting engineer, New York; Arthur E. Morgan, president, Community Service, Inc., Yellow Springs, Ohio; John C. Page, consulting engineer to the Bureau of Reclamation, Lakewood, Colo.; and Charles M. Spofford, consulting engineer, Boston.

The board approved drafting an amendment to the society's constitution to change the four zones into which the country is divided to a purely geographical basis, without regard to the number of members in each zone.

Districts still will be set up on a numerical basis.

Bid shopping bill moves notch forward

The Kilgore bid-shopping bill (S.848) moved a notch forward toward final enactment in both Houses last week. The Senate Judiciary Committee reported the bill favorably and sent it to the floor. On the House side, a Judiciary subcommittee gave its approval.

There is still some question as to the chances of the bill getting brought up for action on the floor of either chamber (ENR June 18, p. 27). The legislation is opposed both by general contractors and government departments and the leadership will be slow to bring the legislation up if it appears it will result in prolonged debate.

New York City's quest for more water from Delaware River nears satisfaction

New release formula prepared for court action has indicated approval of Pennsylvania and New Jersey

It looks as though New York City will get the 360 mgd of additional water from the Delaware River for which it petitioned the U. S. Supreme Court last year—and without a fight.

Ready for judicial consideration is a new release formula that would raise the present 440-mgd limit to 800, to be made available by planned works. Meanwhile, the city would be permitted to withdraw 490 instead of 440 mgd from projects under way.

Quiet negotiations among engineers and legal counsel involved in the tri-state water diversion case have been kept strictly off the record since they started last October. But a final meeting of the minds last week made it possible to take the wraps off the news and learn what has been happening.

• **Background of dispute**—In 1950, plagued by a temporary water shortage attributable to construction delays resulting from war and depression, the city rushed work on Stages 1 and 2 of its Delaware River project, now due to tap the permissible 440 mgd by a 1956 completion date. Looking further ahead to a continued increase in water demand, engineers of New York City's Board of Water Supply completed plans for Stage 3 of their Delaware plan (claimed to be needed by 1960) and received the approval of the city Board of Estimate and the state Water Power and Control Board (ENR Feb. 2, 1950, p. 30).

Stage 3 includes a dam across the Delaware's West Branch at Cannonsville and an $81-million, 44-mile tunnel from there, southeast to the Delaware Aqueduct at Rondout Reservoir. Total cost: $140 million.

New York City bided its time on this project, waiting to see if the Incodel Plan (ENR Feb. 2, 1950, p 25) would gain 4-state acceptance and develop into the long-term answer to basin-wide water problems its proponents believe it to be. But with failure of Pennsylvania to act on formation of a 4-state compact in its 1951 legislature, New York petitioned the Supreme Court to revise its 1931 decree and thereby give its Cannonsville Reservoir the green light.

Pennsylvania and New Jersey filed their opposition to this further diversion of waters by New York, and the court appointed Attorney Kurt F. Panzer of Indianapolis as master to conduct hearings, collect evidence and bring the case before it late this year.

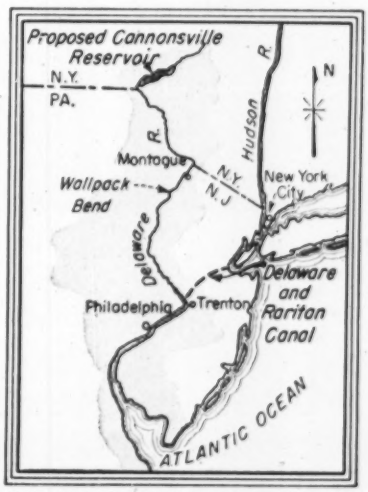
• **Pre-trial conferences**—It was largely at the encouragement of the master that New York and New Jersey engineers conducted a series of conferences beginning last October. By December, a revised formula for releases of water at the Cannonsville Reservoir had been worked out to the satisfaction of both sides.

In January the new water-release formula was presented to consulting engineers of Pennsylvania's special Governor's Water Resources Committee. And by the time legal counsel of the three states reconvened last week, general agreement among the engineers had been reached. The meeting of the lawyers was to work out final details as to what proof shall be presented by the three parties involved.

Because a water release formula beneficial to all three states has been evolved by the engineers, New Jersey and Pennsylvania aren't expected to voice serious objections in their testimony. The master's recommendation to the court is more than likely to be that it heed New York City's petition.

Significantly, the probable decision will satisfy all those concerned, but it will not deprive any party of future recourse to the court.

The formula (called the Montague formula) specifies that flow at Montague gage—in New Jersey about six miles below the New York State line—must not be less than 1,525 cfs before Cannonsville Reservoir is built, nor less than 1,750 cfs after. (Flow at this gage in the past reportedly has been as low as 800 cfs.)



DELAWARE BASIN—Valley of decision.

• **Share the wealth**—Also involved would be agreement by New York City's Board of Water Supply to release 83% of its excess storage beginning June 1 each year, over a period figured to do down-river water users the most good. This means that each year by June 1 BWS would figure its anticipated demand for the months to come; then it would begin releasing 83% of all excess stored water in its entire Delaware system.

New York would get all up to its 360-mgd limit, when needed; when not needed, New Jersey and Pennsylvania would benefit from this up-basin storage.

What New Jersey and Pennsylvania might do with the improved Delaware flow definitely figures into the case.

New Jersey is considering the possibility of greater diversion of water (up to 100 mgd) into its Delaware and Raritan Canal. This old channel runs northeast from below the falls at Trenton to the Raritan River at Manville, N. J. Bringing more water through it to a storage reservoir somewhere in Somerset County could help in some small degree to alleviate northern New Jersey's critical water shortage.

Looking further into the future—to the day when Philadelphia might seek to improve its water quality by tapping the upper Delaware near Wallpack Bend—New Jersey had a bill before its legislature last week to repeal an old law banning construction of dams on the Delaware. Passage of this bill would allow New Jersey to condemn land on its side of the river for construction of a future dam. The bill provides that Pennsylvania would pay the total cost of any such dam, unless New Jersey decides to share in the water impounded (to an extent not exceeding 30%). In that case, shares in construction cost would be worked out.

Consultants for Pennsylvania's Water Resources Committee, while effectively stopping the Incodel Plan by their recommendations early this year (ENR Feb. 19, p 48), did not rule out possible bi-state cooperation with New Jersey on a future reservoir at or near Wallpack Bend.)

If all goes off as well as the negotiations and a favorable Supreme Court ruling is handed down later this year, New York City is expected to lose no time in beginning construction at Cannonsville. Funds are expected to be appropriated by the city as needed, and construction that might extend into the next decade before it is completed is in prospect.

California legislature spurs planning on several multi-million-dollar jobs

Harbor crossings, Feather River development are among proposed projects; state highway program speeded up

California's legislature has completed a session that set the stage for a variety of multi-million-dollar construction projects.

- It appropriated more than $2 million for project studies and engineering plans.
- By voting a 10-year, $700-million increase in gasoline and other highway users taxes, it accelerated the state's road-building program.
- For state building projects, the legislature provided $82 million.

Major proposed projects include:

Feather River water and power development—A $750,000 appropriation was voted to continue studies on the feasibility of state construction of this proposed $1.2-billion project. The plan envisages a huge storage dam on the Feather River near Oroville, Calif., and a system of canals to carry it into the water-deficient coastal and southern areas. The new funds, augmenting $800,000 allowed in the 1952-53 fiscal year, provide for field surveys and topographic maps for canal routes; plans, designs and cost estimates of project features; and right-of-way and water usage contract negotiations.

San Francisco Bay area rapid transit system—To complete studies on this proposed $50-million project, the state advanced $400,000 to augment $350,000 pledged by the nine bay counties in the rapid transit district. The state's advance is to be repaid with 1½% interest a year from the first sale of bonds issued by the district.

Los Angeles harbor—A $200,000 grant will permit further investigation of the proposal for either a tube or bridge between San Pedro and Terminal Island. Preliminary studies of a tube project have been made already. The new funds are being made available to the state's toll bridge authority for a preliminary engineering survey and cost estimate. The tunnel survey report declared conditions favorable to toll financing but recommended further study of financing.

San Francisco Bay—In authorizing another crossing as a toll project estimated to cost $200 million (ENR June 11, p. 22), the legislature voted $1.5 million for engineering surveys.

Carquinez Straits—An appropriation of $800,000 was provided for preparation of engineering plans for construction of a toll span to parallel the existing bridge near Crockett.

Legislation boosting automotive taxes is calculated to make $2.3 billion available for road-building projects over the next 10 years—an increase of about $700 million. A formula written into the measure has the practical effect of providing that money from existing tax rates will continue to be expended on highway deficiencies existing in 1946, while new funds will be distributed according to a new inventory of needs.

Channel pier objection renewed in Mississippi River span protest

The persistent objection of the Dock Board at New Orleans to plans for a proposed new $57-million Mississippi River bridge because it is against having a channel pier was again voiced in a formal protest to the Army Engineers last week.

The protest followed a revised bridge application submitted by the Louisiana State Highway Department to the Army Engineers (ENR June 4, p. 23), altering original plans by an increase in the horizontal clearance from 1,400 to 1,800 ft and in the vertical clearance from 135 to 150 ft and by elimination of one of two piers in the river.

Reluctantly the Dock Board went along with the increased clearances, though it had fought for a vertical clearance of 175 ft. But, the board reiterated its opposition to the one channel pier, which would be located about 205 ft off the west bank.

Proponents of the bridge project, though acknowledging the force of the board's objection, expressed confidence that it would not oppose actively the revised application submitted May 27.

However, in a letter to Col. C. T. Tench, district engineer, dated June 15—two days before the deadline for protests—the Dock Board expressed its opposition to any bridge with piers in the river "as a menace to navigation." It also declared that the 20-ft horizontal clearance from the wharf line of the pier on the New Orleans side landward does not meet the board's shore requirement of 40 ft clearance at the chosen location.

The Dock Board, in its letter to District Engineer Tench said that it was not suggesting further public hearings on the matter.

Whether the latest Dock Board protest will delay processing of the application or whether, if Army Engineer approval is given, the board will contest the plans further is not yet apparent.

The 3,000-ft long toll bridge, together with expressway approach projects, will cost an estimated $90-million. The Mississippi River Bridge Authority, a state agency, will be in charge of construction.

Businessman commission studies toll road need

A five-member commission, composed of business executives, has been appointed to determine the feasibility of constructing a Wisconsin cross-state toll highway from the Illinois border to the Minnesota line.

Serving on the commission for three-year terms are: C. K. Alexander of Madison, research director of the Wisconsin Taxpayers' Alliance; Edward Fitzgerald of Milwaukee, president of the Northwestern Mutual Life Insurance Co.; Bruce M. Jeffris of Janesville, president of the Parker Pen Co.; W. A. Roberts of Milwaukee, president of Allis-Chalmers Manufacturing Co., and Glen V. Rork of Eau Claire, retired president of the Northern States Power Co.

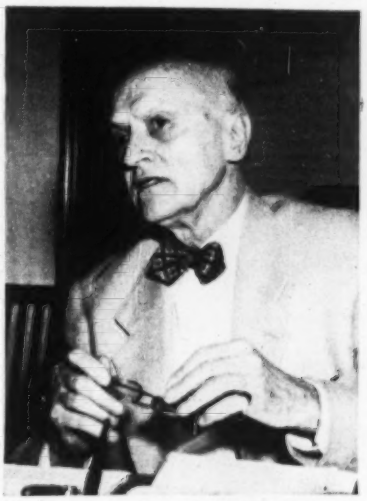
W. Va. commission gets tough about pollution

West Virginia's state water commission has ordered the city of Huntington to build a sewage disposal system within three years and to have plans and specifications for the project drafted within a year. The project is expected to cost over $7 million.

A State Supreme Court decision early this year affirmed the commission's power to order the city to stop polluting the Ohio and Guyandotte rivers, ending a legal tug-of-war extending back to 1949.

Although taking a more lenient attitude toward other municipalities, the commission indicated it would follow a stricter policy in future. A new law, giving the commission broader powers and bringing coal washery waters under its jurisdiction, is now in effect.

The commission is requiring some 50 or 60 municipalities to report on what action they are taking to correct pollution conditions. Those submitting unfavorable reports will receive abatement orders.



REP. SAMUEL McCONNELL, JR. (left), and Sen. H. Alexander Smith, chairmen of the labor committees, will take up the amendments in Congress.

Administration to propose changes in Taft-Hartley after much conferring

At long last, Congress is getting some specific recommendations from the White House for amending the controversial Taft-Hartley labor law. But they come too late for Congress to act this year. Legislation will have to wait until next year's second session of this Congress.

The Administration proposals will follow weeks of White House meetings, conferences and discussions within the official family, with Senate and House leaders, with experts from industry and with representatives of the American Federation of Labor. Efforts were made to get as much agreement as possible on how the 1947 labor statute should be improved.

How much agreement the Administration got remains to be seen. The Congress of Industrial Organizations was not invited and did not participate in the discussions. One high CIO official told ENGINEERING NEWS-RECORD the CIO was not anxious anyhow to be party to something it might find unacceptable and have to criticize.

Secretary of Labor Martin P. Durkin and Secretary of Commerce Sinclair Weeks could not agree on most points.

Industry sources who have seen drafts of the White House "bill" consider it too favorable to organized labor. Sen. Robert A. Taft, although feeling that the White House can get agreement on about 15 amendments, admitted that "the majority will be leaning in the direction of labor."

This situation may result:

The White House amendment will be attacked by the CIO as unsatisfactory and not going far enough to improve the law.

Employer organizations will likely criticize them as going too far in labor's favor in drafting the amendment.

The AFL may support the amendments, although more likely it will join the CIO in attacking them. If it supports them, it will create another split between the CIO and AFL on legislative matters. The AFL has come out against the St. Lawrence Seaway.

A majority of Congress will likely find the White House amendments too pro-labor or inadequate and add some stiffening amendments of its own.

Wide World photos.

SEC'Y MARTIN P. DURKIN, couldn't agree with Commerce Sec'y Weeks on a bill.

• **White House steerer**—Handling the job for the White House is Bernard M. Shanley, a special counsel to President Eisenhower, without previous significant experience in labor-management affairs. He has been working for weeks trying to get agreement between Durkin and Weeks. He has also had conferences with Taft-Hartley expects on both sides of the fence. From labor they included two AFL attorneys—J. Albert Woll and Herbert S. Thatcher.

Shanley also talked with three "management" experts—Gerard D. Reilly and Thomas E. Shroyer, who helped draft Taft-Hartley, and Theodore Iserman, New York attorney and author of a book which excoriated the Wagner Act before Taft-Hartley superceded it.

And he discussed the problem with Sen. H. Alexander Smith of New Jersey and Rep. Samuel K. McConnell, Jr., of Philadelphia, chairmen of the Senate and House Labor Committees.

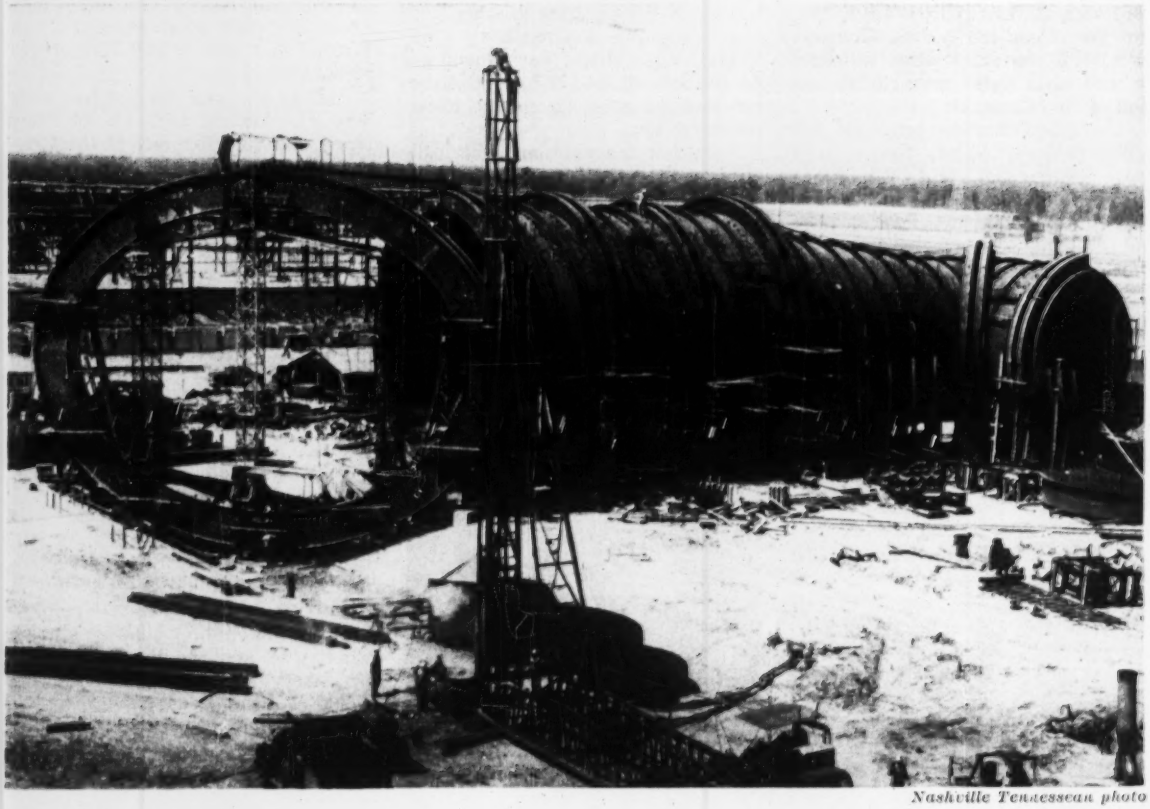
Last week President Eisenhower and Taft joined Shanley, McConnell, Smith, Durkin, Weeks' counsel, Stephen F. Dunn, and others in a White House discussion of proposed amendments. Another meeting was scheduled for this week. Word was that some Administration amendments would be forthcoming, but could not be taken up this session because Congress plans to adjourn the end of July.

• **Construction amendments**—Two amendments discussed will have particular application to the construction industry. One would be to permit in industries having "casual employment" a union-shop contract forcing workers to join the union after the first day of employment. Another would ease the secondary boycott ban by making the seeking of an injunction optional with the National Labor Relations Board, rather than mandatory.

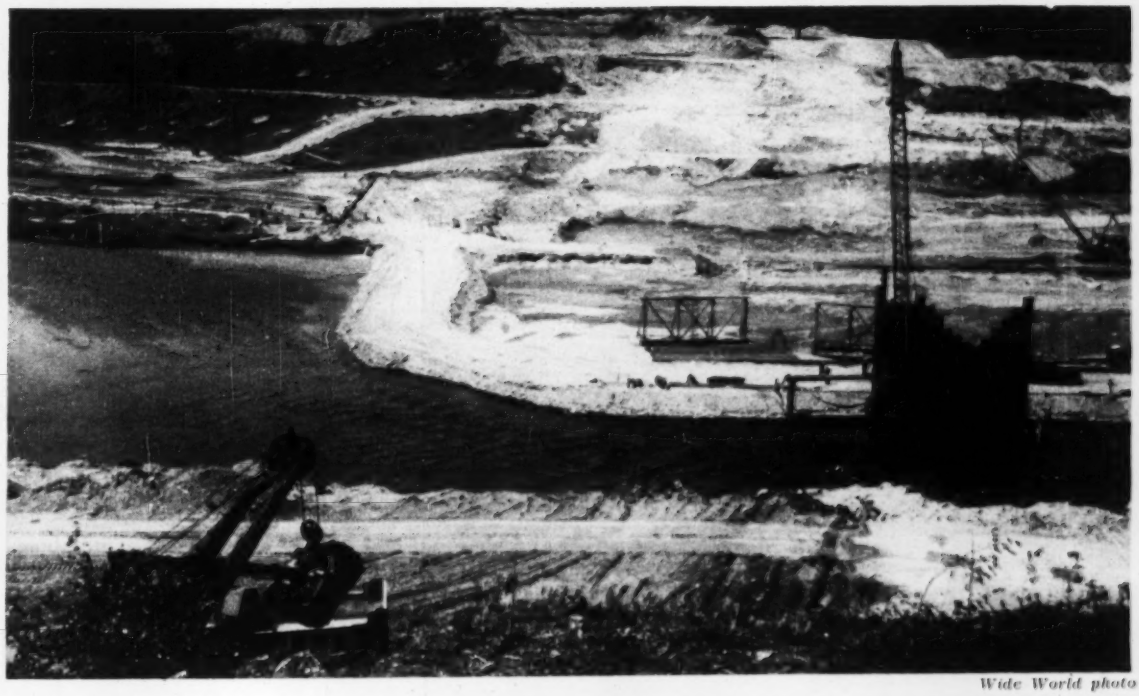
Nashville Tennessean photo

BIG WIND IN TENNESSEE

This giant rotor being lowered into position at the Arnold Research Development Center at Tullahoma, Tenn., (ENR June 11, p. 26), will be the core of one of four motors that will produce the 216,000 horsepower required to push air—faster than sound—through the propulsion wind tunnel (below). Together the motors and tunnel will form the world's largest rotating machine. From end to end it will measure about 500 ft, and the four-motor drive alone will weigh more than 1,000 tons. According to Westinghouse Vice-President L. B. McCully, "No other rotating machine comes close to it for size." When completed it will be used to test supersonic aircraft, guided missiles and aircraft engines of the future.



Nashville Tennessean photo



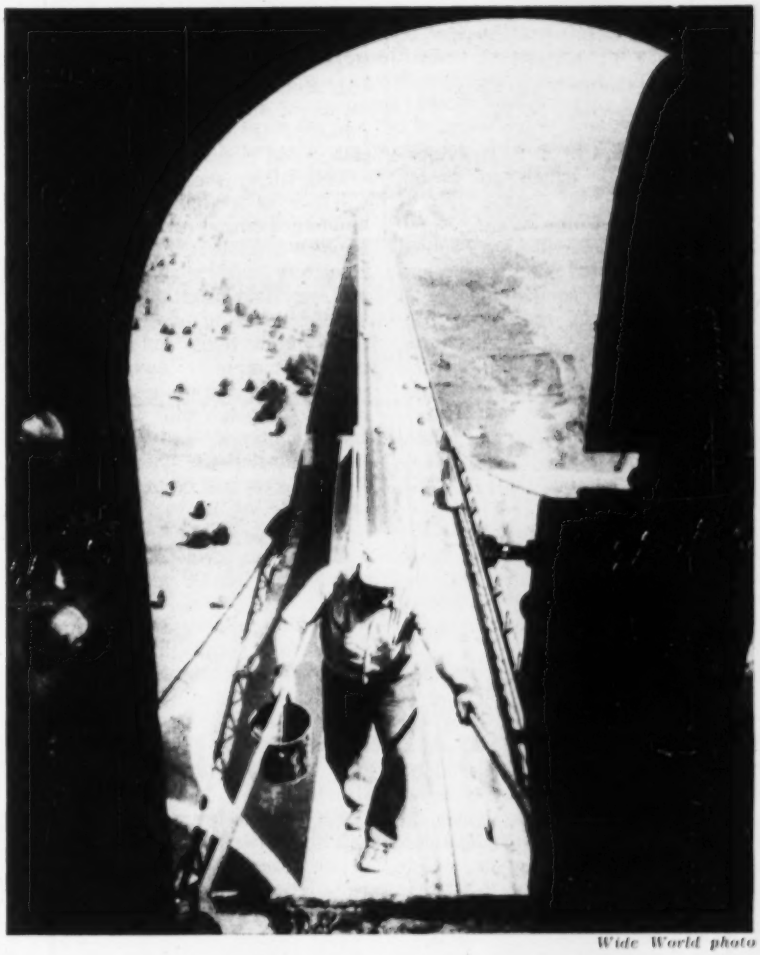
Wide World photo

NEW DAM ON THE HOUSATONIC

Construction of a new power dam on the Housatonic River northeast of Danbury, Conn., has been started by the Connecticut Light & Power Co. The dam is to be of concrete, 1,400 ft long and about 100 ft high. As shown in the photo above, the river has been diverted to one side of the channel to permit excavation to rock on the other side of the valley. The power plant will have an installed capacity of 37,250 kw. It is expected to be on the line in 1955. Charles T. Main, Inc., Boston, are the engineers and the construction contract is held by United Engineers & Constructors, Inc., Philadelphia.

THE LONG VIEW

Motorists driving over the Bronx-Whitestone bridge in New York City were a little awed recently at seeing tiny figures working high in the bridge superstructure. But even more impressive was this view looking down. The occasion was the bridge's first painting in six years. A particularly ticklish job, it can be done only in daylight hours during dry weather and when the wind is under 15 miles per hour.



Wide World photo

CONSTRUCTION ECONOMY through standardization of design is the keynote of G.E.'s $200-million development near Louisville. Its five 500,000-sq ft electrical appliance manufacturing buildings are almost identical in design.

General Electric's Appliance Park plant will be big, flexible and efficient

R. E. Linton
Albert Kahn Associated Architects & Engineers, Detroit, Mich.
and

J. C. Nowell
General Electric Realty Corp.
Schenectady, N. Y.

Standardization of units and duplication of design details are paying heavy dividends in construction of General Electric Company's big Appliance Park, near Louisville, Ky. Planned for the consolidated manufacture and distribution of the company's full line of major appliances, the "park" ultimately will include five manufacturing buildings—each with a floor area of more than 500,000 sq ft, for the production of electric ranges, refrigerators, room air conditioners, home laundry equipment, and electric sinks. Completion of the five buildings is scheduled for some time in 1955.

The very size of the project—which will reach an ultimate cost of more than $200 million—dictated that design criteria and construction economies be planned and executed to the highest degree attainable.

At the same time primary consideration has been given to the layout of all building and yard facilities for manufacturing efficiency and flexibility. Also emphasis was placed on providing good working conditions for both factory and office personnel, attractive landscaping and park-like surroundings for the factory site, which covers one square mile.

• **Carload shipments**—In addition to the five big manufacturing buildings, there will be a 2,000x400-ft central warehouse for storage and shipment of appliances by rail or truck. Dealers thus will be able to order full carload shipments of a single product—refrigerators for example—or mixed shipments of the many products to be produced at Appliance Park, at low full-carload rates.

Ultimately, the development also will include an administrative group of buildings housing personnel, engineering, and development offices; extensive laboratory facilities; and reception, display, and demonstration areas.

Other units in the development include a boiler house and a propane gas plant; a temporary sewage treatment plant; industrial waste treatment plant; incinerator plant; mill water reservoir and pumphouse; and a master electrical sub-station. Two large 800x1,600-ft areas will be provided for employee parking, up to a total of 8,000 automobiles. The plant facilities have been laid out for a possible total employment of 16,000 people.

• **Standardized designs**—Full advantage was taken of standardization of design and construction in setting up design specifications, working out general layouts, and developing construction details for both the manufacturing buildings and attached two-story office structures.

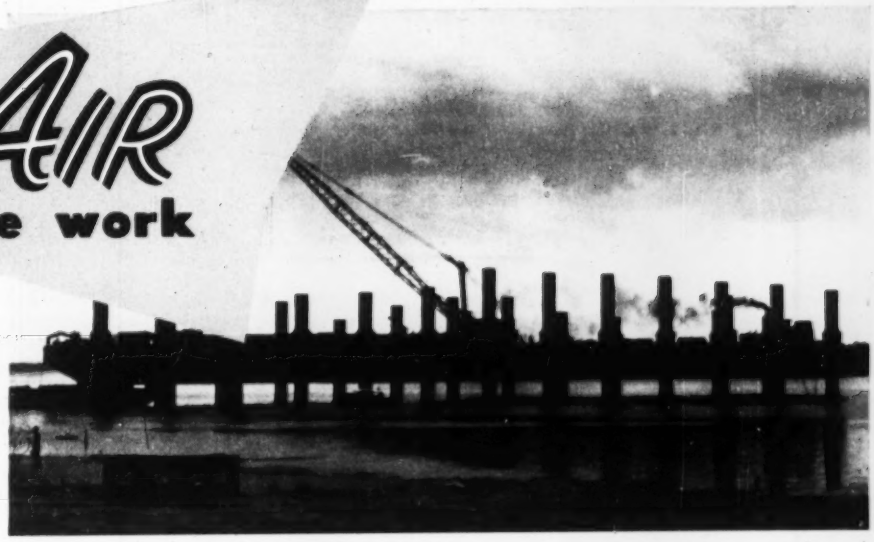
Each of the five principal buildings will be identical in general design and details, except where it is necessary to meet varying manufacturing requirements. For example, a standard 40x100-ft bay spacing for structural steel is being used throughout. This was decided on after weighing initial construction cost against the flexibility resulting from the elimination of intermediate columns.

Good headroom also was desired to permit full flexibility in the proposed installation of two levels of conveyors with provision for a third level, where necessary at crossings. Clear headroom below trusses is 27-ft minimum, and 30 to 40 ft in those buildings where the manufacture of larger products will require additional clearance for conveyor installations.

Exterior bays will provide for railroad and truck pits. All steel framing in these bays is designed for 15-ton bridge cranes for unloading, storage and handling of incoming steel sheets and other raw materials. Steelwork for the center bays has been designed for 5-ton cranes, either of the bridge or overhead types supported directly from the roof trusses. In the latter case the crane load is an alternate for the standard conveyor loading at 300 lb per lin ft of standard roof truss.

• **100-ft bays**—Each manufacturing building has been planned for a minimum width of 600 ft, using six 100-ft bays. The first building will produce home laundry equipment and will have an initial length of 880 ft. The second building, in which electric ranges will be manufactured, will have about the same initial length. Building No. 3 for electric sink manufacturing will be somewhat shorter initially, but all buildings are being laid out for expansion in length as well as in width, if required. In fact, the layouts for all

Let AIR do the work



ERECTION of Orinoco Mining Company's heavy cargo and ore handling dock at Puerto Ordaz, Venezuela. The dock is constructed of 3 prefabricated pier sections that are jacked up on steel caissons 6 ft. in diameter. Lifting is done by DeLong Airjacks that are precisely controlled by a Westinghouse Air Brake Co. pneumatic system.

Barge climbs steel legs to become permanent pier

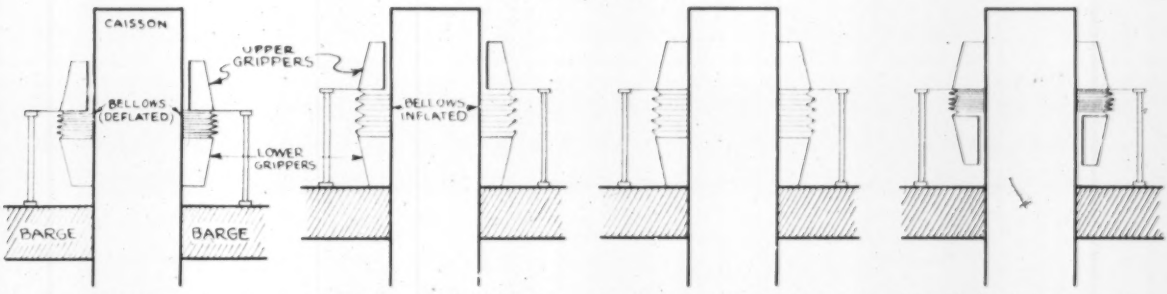
● This pier is shown being erected on the Orinoco River in Venezuela. But it was *built* in Texas. Each of the three pier sections, 32 ft. wide and 277 ft. long, was towed 3,000 miles across the Caribbean Sea to Puerto Ordaz, Venezuela. There, 26 steel caissons were lowered through holes along the sides of the deck and driven to bedrock.

Each 2250-ton section was then jacked up to permanent elevation by 26 DeLong Airjacks, controlled by a Westinghouse Air Brake Company pneumatic system. This control system is accurate enough to permit raising the pier in increments as small as $\frac{1}{32}$ of an inch, and it provides either simultaneous or individual operation of the 26 Airjacks.

This type of pier, designed and erected by DeLong Engineering & Construction Company, of New York, can be towed to any location in the world and erected in a matter of days, at a saving in cost to the owner. If a portable pier is desired, the pier can be jacked down after serving its purpose, moved to a new location, and re-erected at very little cost.

Westinghouse Air Brake Company pneumatic systems can be used to control the operation of many types of mechanical equipment. If you would like the assistance of our organization, drop us a line.

HOW IT WORKS . . .



The pneumatic grippers work like a boy shinnying up a flag pole. First step in raising the pier is to tighten the lower grippers around the pipe . . .

With the bellows fully inflated, the grippers in the top portion are tightened to hold the structure in the elevated position.

Then the bellows between the upper and lower grippers are inflated. This raises the top portion of the Airjack, which is attached to the deck of the pier and raises the entire pier section about 6 in.

The bellows are then deflated. The lower grippers are released, and the lower portion is drawn up so that the jack is ready for another lifting cycle. The great accuracy of the Westinghouse control system permits movements as small as $\frac{1}{32}$ of an inch.

Westinghouse Air Brake COMPANY

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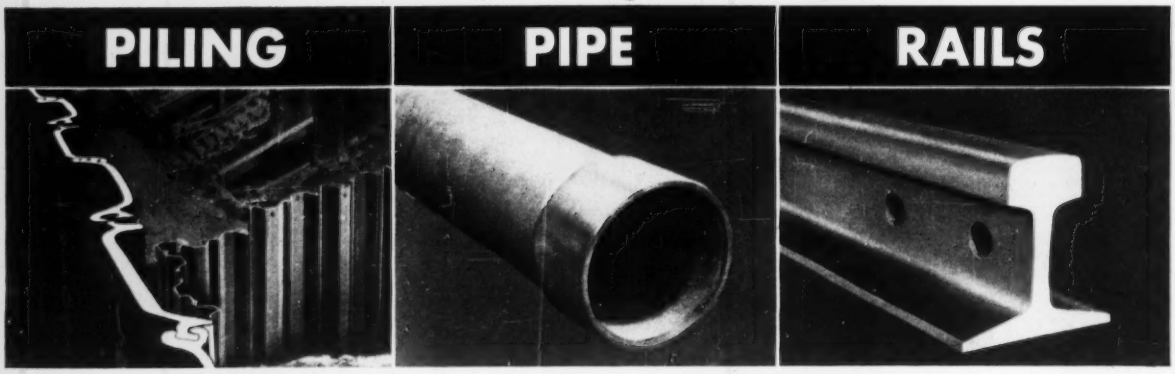

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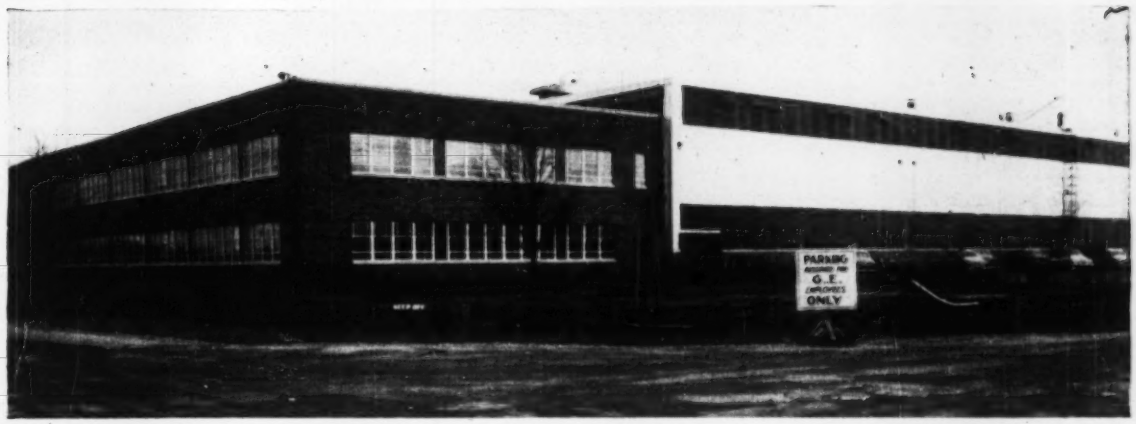
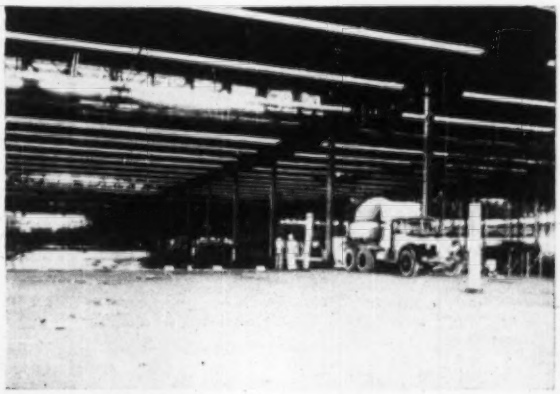
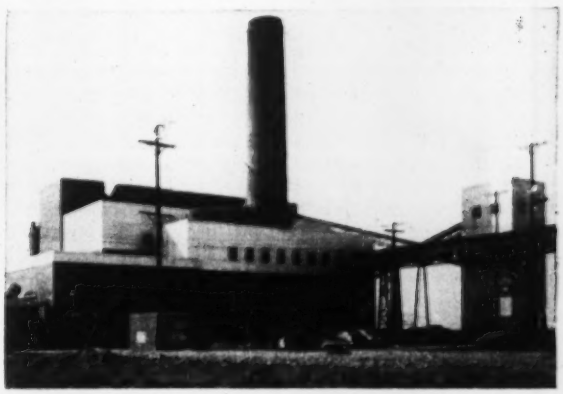


EACH MANUFACTURING BUILDING will have its own two-story office section 80 ft wide and 600 ft long; of brick-faced, reinforced concrete construction. Exterior walls of the manufacturing buildings are aluminum siding and continuous steel sash with heat-absorbent glass.



MANUFACTURING BAYS 100-ft wide permit flexibility of operations. Floors are concrete base slabs, supporting 2 in. of lean concrete and topped with 2-in. wood block for working comfort.



POWER PLANT furnishes steam at 250 psi for manufacturing purposes and at 30 psi for heating. Steam headers, compressed air, condensate and power distribution lines are carried on steel trestles (at right) for economy, easy maintenance and flexibility

yard roadways, trackage, piping, and other services have been developed to permit the ultimate extension of all manufacturing buildings to a length of 1,480 ft each.

Similar provisions were made in laying out the general grading. This required an extensive general grading job entailing both cut and rolled fill, compacted to 95% maximum density, to bench out the sloping site to a common elevation for all manufacturing buildings. The site is underlain by a dense, thickly bedded limestone with clay overburden, both dipping slightly to the west.

After general grading operations, the bench occupied by the manufacturing buildings has a clay cover above the limestone varying in depth from zero to about 20 ft. Under these conditions, and with relatively heavy column loads from the 40x100 ft standard bay spacing, foundation economy was obtained by boring through the clay to solid rock for the pouring of concrete caisson foundations, no forms or reinforcement being required for this operation.

• **Aluminum siding**—For all manufacturing buildings, standard construction will consist of masonry sill walls, brick-faced with concrete block back-up to a height of 4 ft 9 in. Above this level, a continuous band of steel sash is being used, combined with one intermediate band of aluminum siding and a similar sash band just below the eave strut. Heat-absorbent glass, to reduce glare, has been specified for sash.

The steel roof deck will have a ¾-in. layer of insulation, with a vapor seal below the insulation and a standard four-ply tar and gravel-type roof above. No insulation behind the siding has been specified, since a study of heat losses and requirements indicates that considerable heat will be given off in many areas by electric furnaces and similar manufacturing equipment. Normal heating and ventilating requirements are being handled by winter supply fans on small platforms supported on the roof trusses and equipped with heating coils. Additional supply and numerous exhaust fans are provided for summer comfort.

• **Wood-block floor**—Manufacturing-floor construction will be of 2-in. wood block for working comfort and flexibility. The block will be set on an intermediate fill of 2 in. of lean concrete above the regular concrete base slab. Thus, a depth of 4-in. will be available to give excellent flexibility in the layout of equipment foundation pads. This also permits piping and wiring connections to be run beneath the floor, rather than overhead, where it would be necessary to keep them clear of cranes and conveyors.

Each manufacturing building will have 8 main equipment platforms, supported from the trusses, for mounting transformers and special ventilation equipment needed in certain areas. In addition to transformers to serve special banks of welders, each building will be provided with 8 double-ended,

2,000-kva unit load substations; 13,800 to 480/277 v, provided with draw-out type switchgear, including an ample number of feeder breakers, and two main secondary and a tie breaker so that the secondary buses may be fed from either or both of the transformer sections.

The secondary power distribution system will consist of various types of service to meet different requirements. For example, many loads for enameling ovens will be fed directly from the secondary bus of the nearby load center. In other cases the electrical bus will be mounted along the column lines or at the back of banks of equipment, with plug-in breakers and overhead connections to the individual machines.

• **Fluorescent lighting**—Lighting will be provided by 277-v fluorescent fixtures, laid out to provide a minimum intensity of 35 ft-c maintained in service. They will be mounted at the level of the lower chord of the trusses, except where a lower height is necessary to place fixtures below banks of conveyors.

The standard piping layout for all manufacturing buildings includes steam at 250 psi, steam at 30 psi for building heating, condensate, gas, air, and mill and domestic water. These will be furnished from piping loops run longitudinally along the first two lines of interior columns and across the ends of the building to provide complete loops. Each system will have a number of sectionalizing valves and plugged tees located 20 ft c-c for reliability of service and flexibility.

From these loops, branch mains and service drops will be run, following the same pattern as the electrical connections—overhead with headers along banks of equipment, or in other cases through the wood block floor and fill, turning up to the individual pieces of equipment.

An extensive system of underfloor drains is also being provided for flexibility in terms of initial manufacturing layout and changes to suit future developments. In addition to cast iron sanitary drains, the underfloor system includes economical, vitrified clay pipe for roof leader connections and for clean water from cooling coils. Combined, these will flow to a large mill reservoir for recirculation in the interests of economy in cost of water.

In addition, other tile lines are being installed for acid, alkali, and other process wastes. Combined, and given primary treatment these wastes will be discharged into a main trunk sewer which is being provided in cooperation with the Metropolitan Sewer District of Jefferson County.

Steam at 250 psi pressure and compressed air for all buildings will be furnished by a central boiler plant with pipe lines and main power distribution to the manufacturing buildings run overhead on steel trestles.

The pipe trestle structure from the boiler house to the various buildings, carrying the main steam headers, air, condensate, and power distribution lines, also is designed as a finished-product conveyor bridge. Such portions of the trestle, coming within the limits of future expansion of any of the buildings are so arranged that any extension planned can be made. Furthermore, the structural steel building frame can be erected without removing or disturbing any of the service lines or power distribution system.

• **Five office sections**—Each of the five manufacturing buildings will have its own 600x80-ft office section constructed along the front or east end. Each section will be two stories high, with provision for the addition of a third floor if required.

Here again, economic studies were made prior to determining the office layouts and the details of the design. This will allow full standardization of all five office sections. In each section, a relatively small part of the area will be fully finished for occupancy by the executive group which will direct the operations in the adjacent manufacturing building. On the other hand, the large majority of the 100,000 sq ft area for each office section will be used as general office space or assigned to engineering, drafting, development, and laboratory personnel.

For these groups, efficient working space was required without the expense of hung-ceiling construction and similar items. Considering economy as well as the desirability of conserving critical structural steel work, a flat-slab concrete design was selected. Bay spacing is about 25x25 ft. For best appearance, square rather than round columns were selected.

Flared column capitals have been avoided by using a dropped panel at the column head sufficiently deep to limit punching shear within allowable code stresses. The result is a generally smooth ceiling on which acoustic material will be mounted directly wherever occupancy so requires. Considering among other things the re-use of form work for the various floors of the several office structures, it seems evident that the construction selected is combining speed of construction and savings in critical materials.

Plastered construction on block will be used for the permanent partitions including those for the main office corridors. Other partitions will be removable for flexibility and will be set on the asphalt-tile floor finish. Lighting will be furnished by fluorescent commercial-type fixtures with intensities at or above 50 ft-c maintained for engineering and accounting offices, and drafting rooms. All space in the office sections will be fully air conditioned. Additional supplementary heating will be provided by convectors mounted below the aluminum architectural-type sash.

• **Initial production started**—Installation of manufacturing equipment is already well advanced and limited production operation has begun in both Buildings 1 and 2. Building 3 is closed in. Grading and foundations for Building 4 are complete, and erection of steel is getting underway. It is considered, therefore, that the job has already progressed sufficiently to give a good back sight on the fundamental design decisions and on the advantages of standardization of design and construction.

It has been evident that duplication of design has permitted favorable purchasing of materials and equipment on combined orders, oftentimes well in advance of completion of drawings for the later buildings. This has proved a tremendous advantage in past periods of material shortages. Other equally important advantages of standard designs and details have been demonstrated in speed and economy of construction through the use, on the successive buildings, of the same general methods, form work, construction equipment, and other details worked out for the initial buildings.

• **Designers and builders**—In accordance with standard practice on General Electric projects, the design and construction of Appliance Park is being handled by the General Electric Realty Corporation. Throughout the preliminary study, and design stages of the project, and its subsequent development as a going construction job, the closest cooperation has existed among the several organizations participating.

These include: the Major Appliance Division, which will occupy the plant on its completion; F. A. Fairbrother-George H. Miehls—Architect and Engineer; Albert Kahn Associated Architects and Engineers, consultants, who have been retained for all architectural-engineering work; the firm of Eggly-Furlow, Inc., of Philadelphia, which is handling numerous parts of the mechanical engineering work in association with Albert Kahn; and the Turner Construction Company of New York City and the Struck Construction Company of Louisville, Ky., the firms which are constructing the project jointly under a cost-plus-fixed-fee contract.

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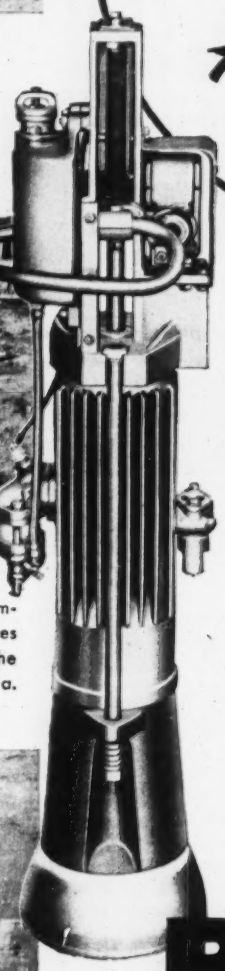
CALIFORNIA HOSPITAL—Ability to work inside buildings and in other restricted areas makes the Barco Rammer invaluable. The job pictured above is on the Peninsula Hospital near Millbrae, California. *Contractors:* Williams & Burrows and Carl N. Swenson Company. (*Photo:* CONSTRUCTION ILLUSTRATED.)

GEORGIA HOUSING PROJECT—With Barco Rammers, you can finish fill to high degree compaction immediately for quicker completions and important savings in cost. This is why the J. A. Jones Construction Co. used seven Barco Rammers on the Lakewood Housing Project at Atlanta, Georgia. (*Photo:* DIXIE CONTRACTOR.)

NEW YORK DAM—Exacting specifications for soil compaction on the Downesville Dam project of the New York City Board of Water Supply were easily met by Barco Rammers used by Carlo Bianchi & Company. (*Photo:* CONSTRUCTIONEER.)



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The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. On area tamping, where specifications call for 95% to 97.5% (modified Proctor) compaction, one man can average 20 to 30 cubic yards of fill per hour, day after day.

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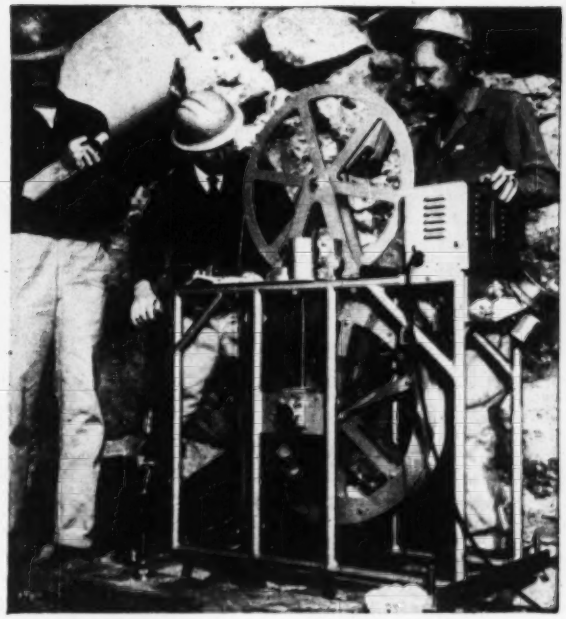
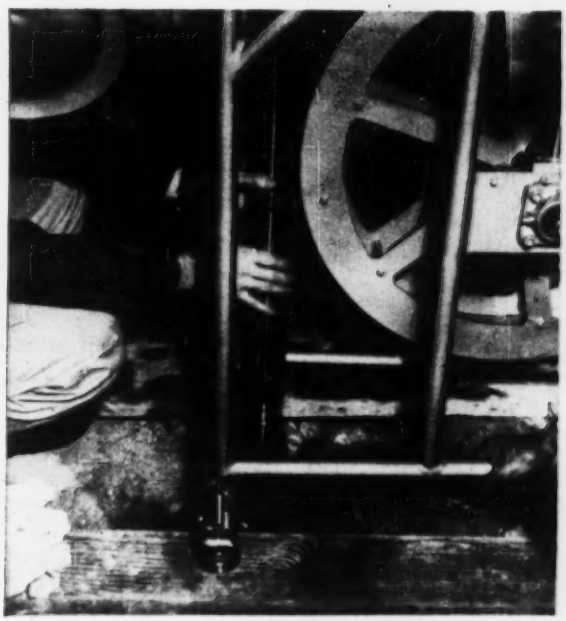


AT BORE HOLE, reel with measuring idler hoist . . .



360-DEGREE CAMERA, which takes photos of hole's wall.

New aid for foundation men:

The bore-hole camera

At California's Folsom Dam, where a foundation fault problem has arisen during construction, photography is speeding investigations that will determine the corrective measures.

The camera is in a slim cylinder that can be lowered into 3-in. holes. It takes a continuous series of full 360-deg views, the images being transmitted via a conical mirror to the flat film. With a special projector the resulting circular picture can be shown as a band similar to the hole section that was photographed.

Considered a supplement to core borings and the expensive calyx holes (where a man may enter for direct inspection of rock), the bore-hole camera is especially useful in seamy zones where it is difficult to get whole cores. Moreover it can be used in holes that were made by ordinary percussion drilling methods.

This camera was developed in response to a design concept set by E. B. Burwell, chief geologist, Office Chief of Engineers, U. S. Army.

Builders of the camera were the Engineering Research Associates of St. Paul, Minn., and Arlington, Va., a division of Remington-Rand.

• **Pilot model**—The bore-hole camera demonstrated at Folsom Dam is a pilot model—the only one in existence. It uses ordinary house current converted to direct current with three circuits: one for a high-voltage flash tube and cone mirror, one circuit for advancing the film, and the other, a low voltage line, to synchronize the flash with the advance of the film.

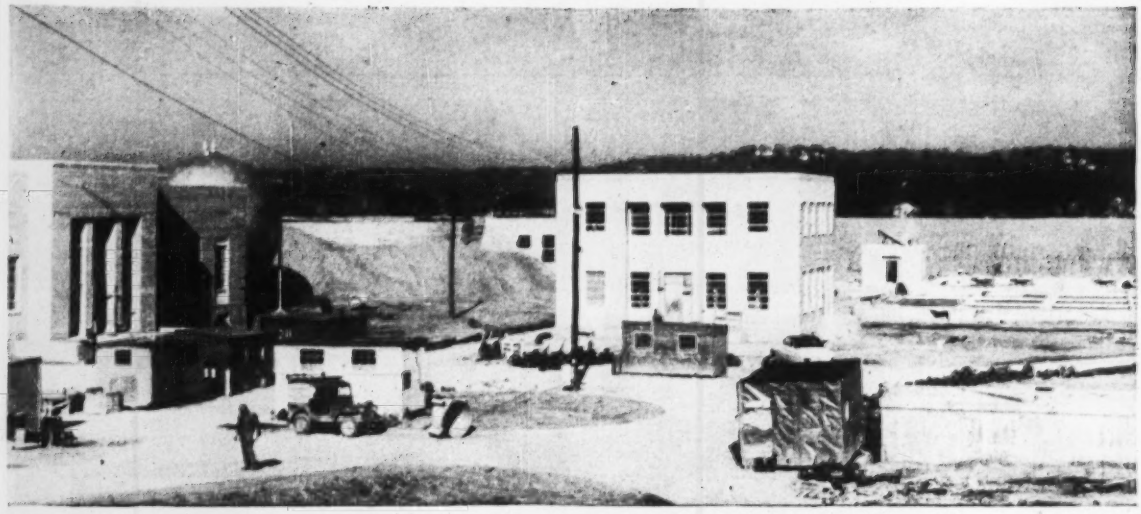
Before risking the camera in a drill hole, a dummy of the same size and weight is sent down. If all goes well, down goes the camera itself to a predetermined depth. A counter on the hoist keeps track of the footage. The pictures are made on the way up because tension on the cable is more constant. As the camera is reeled in, timing gears set off the electrical impulses that operate the flash and advance the film. The camera has no shutter, the flash taking care of exposure time. However, the amount of light reflected can be controlled by lens setting as in a regular movie camera. Each picture takes in ¾ in. of vertical section inside the hole, the pictures being adjacent, with sufficient overlap for matching exposures. Color film is used.

SPECIAL PROJECTOR brings rock photographs into office where all can see.

The film itself shows a pea-sized flat image, which is projected through a conical glass prism slightly larger than the cone mirror of the camera. This image is then refracted on a surrounding cylindrical ground glass screen of the same diameter as the original boring, and 1½ inches high. The picture is about the same size and shape as a flat steel bracelet.

Inside the camera is a compass: when the picture is made, the north arrow shows on the film, for its proper orientation.

Other features include a synthetic quartz window through which the camera sees the rock. The quartz is milled from a solid block and is used not only because of its hardness and strength, but because light in passing through quartz is affected just about the same as it is in passing through water. Some holes contain water naturally, others are flushed just before photographing. The water seals in the camera can withstand all expected water pressures. If the water is clean, the results are better than for dry holes.



HOPE FOR THE OHIO—The compact Little Miami sewage works is Cincinnati's first step in cleaning the river at its door.

Cincinnati shows way in Ohio River clean-up

Dedication date of Cincinnati's $6-million Little Miami sewage treatment plant has been set for next Oct. 6—the same day city officials hope to break ground for their planned $22-million Mill Creek plant, five miles downstream.

The 29-mgd Little Miami plant, now getting its finishing touches, is a key project on the Ohio River. It will be the largest treatment plant completed on the river since the Ohio River Valley Water Sanitation Commission (Orsanco) began to function in 1948.

The plant's location is strategic, situated as it is, about midway along the 900-mile Ohio River, Cincinnati will expect, and probably demand, that communities upstream clean the river passing by Cincinnati's door. And communities downstream will be shorn of their argument that the river is already so polluted that their wastes can't matter. Pollution control in Cincinnati might well pace the overall progress of clean-up—at least along the main stream.

• **Cleans two streams**—Little Miami plant is a significant piece of the basin-wide picture; it is also to be a workhorse for clean-up of local waters. The 3.3-mile Little Miami interceptor—generally paralleling the Little Miami River, an Ohio tributary, on its west bank—will do much to clean the flow now discharged into the Ohio River. And a 1.1-mile interceptor along the Ohio itself will pick up wastes now discharged directly. Sewage from a design population of 153,000 will reach the plant by 1980.

Treatment is designed for 65% removal of BOD, in accordance with Orsanco's Standard No. 1. This will result in a 70% coincidental removal of suspended solids. Sewage coming to the plant will be typically 270 ppm BOD and 250 ppm suspended solids.

Design of this primary treatment works has put flocculation ahead of sedimentation; this extra feature will step up plant efficiency as may be necessary in times of low flow in the Ohio.

• **The process**—Bar grates protect the raw sewage pumps that deliver flow into the plant at the overflow diversion chamber (see flow diagram). After grit chambers, sewage will flow beneath a chemical building where coagulant (alum) will be added as needed. The channel from chemical building to flocculation and settling tanks is equipped for aeration, with fixed tube diffusers.

Settling tank effluent will be chlorinated before discharge to the 5x5-ft outfall. Settled sludge will be removed from both flocculation and settling tanks by mechanical scrapers and pumped to externally heated digesters.

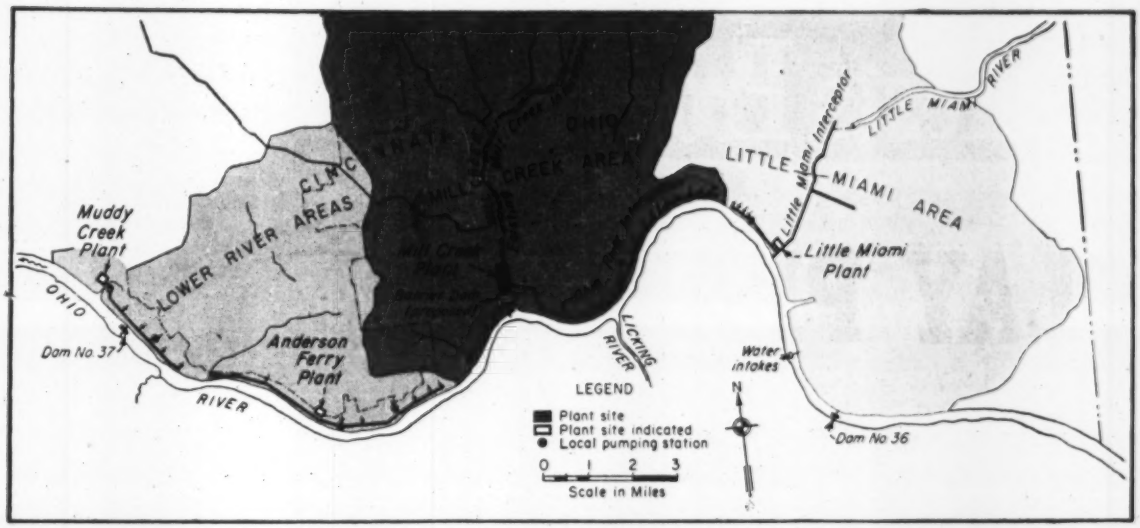
Digested sludge, elutriated and conditioned with ferric chloride, will be vacuum filtered, dried for use as a soil conditioner or burned to ash in multi-hearth furnaces.

LOOKING AHEAD—Arthur Caster (left) is the city's sewage disposal boss. David Backmeyer (right), who'll run the new plant, has been on the job for six months.

• **The plant**—All tanks and buildings of the compact plant fit on a mere 10 dike-enclosed acres. The access road passes through a flood gate in rolled-earth dikes built to El. 503, a 71 to 72-ft river stage (base datum is El. 429). If and when the plant extends westward, into secondary treatment, the protective dike would have to extend with it. (The embankment is planted with honeysuckle rather than grass—a maintenance economy choice.)

Inside of the plant buildings another choice of city engineers and their consultants will result in lower maintenance costs: All interior walls above basement level are tile; there is no plaster. All doors, windows and gratings are aluminum. Thus the whole plant can be hosed down by regular maintenance forces.

• **On the job**—If operation gets off to a smooth start late this summer as



FIRST STEP OF THREE—Completion of the Little Miami plant will be followed by Mill Creek and two lesser plants.

planned, it can be attributed in part to the fact that David Backmeyer, plant superintendent, was hired in time to be in on the last half-year of plant construction. He has been with Arthur D. Caster, Cincinnati's young sewage disposal engineer, through all the usual minor end-of-job design changes, plus the installation of the equipment his force of 42 persons will operate and maintain.

Frank Tolles has been project manager for consultants Havens and Emerson, Cleveland, and D. J. Donnelly is resident engineer for the city of Cincinnati. James McHugh Construction Co. of Chicago, is general contractor on the all-but-complete plant.

Construction began early in 1951, and the construction force totaled over 200 at peak. Some 75,000 ft of composite concrete piles (of Western Foundation Co.) had to be driven to support and resist uplift on the plant.

• **Mill Creek next**—With the Little Miami about ready to be cleaned up, Cincinnati is now looking at Mill Creek, heavily industrialized stream reaching the Ohio further west in its flow past the city. Present plans call for completion of a 115-mgd primary treatment plant with interceptors along Mill Creek by 1958. Then, addition by 1960 of two much smaller plants further downstream (Anderson's Ferry and Muddy Creek) would about clean up Cincinnati's present contribution to Ohio River pollution.

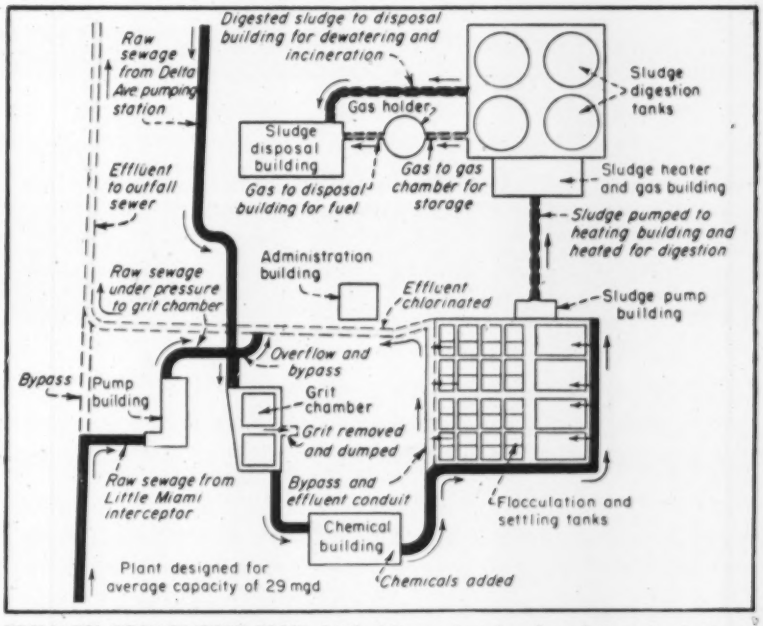
The contract for the outfall sewer already has been let to Foley Construction Co. of Cincinnati for $1,864,000. First contracts on the plant itself are expected to be ready for bidding by July.

Havens and Emerson are Cincinnati's consultants on Mill Creek, too, and their estimates of cost completed last year call it a $22-million plant. This figures $191,000 per mgd or $12.09 per capita. Recommended treatment would handle a sewage with 500 ppm suspended solids and 400 ppm BOD. The Mill Creek process would be essentially the same "primary plus" treatment as the Little Miami's, with room for expansion into secondary treatment. Initial operation and maintenance costs are estimated at $764,000 per year.

• **Where money comes from**—Cincinnati's whole sewage treatment program totals $47-million worth of construction. The money will come from limited revenue bonds ($7.5 million issued to date) backed by a brand new rate structure that will supplant rates put in force as recently as 1948. Cincinnati's stepped-up sewage disposal program, spurred by recent regulatory measures, had outdistanced its 1948 figures on sewage service income.

Revision of the basic sewage rate structure was passed early this year and is expected to return a total of nearly $3 million annually—enough to support the present program of the 22 political subdivisions comprising the Metropolitan Sewage Disposal Area.

Also passed since the first of the year was an industrial wastes ordinance defining "normal sewage" and providing


Digested sludge to disposal building for dewatering and incineration
Raw sewage from Delta Ave pumping station
Gas holder
Sludge digestion tanks
Sludge disposal building
Effluent to outfall sewer
Gas to disposal building for fuel
Gas to gas chamber for storage
Sludge heater and gas building
Sludge pumped to heating building and heated for digestion
Administration building
Raw sewage under pressure to grit chamber
Effluent chlorinated
Sludge pump building
Overflow and bypass
Bypass
Pump building
Grit chamber
Grit removed and dumped
Raw sewage from Little Miami interceptor
Bypass and effluent conduit
Flocculation and settling tanks
Chemical building
Plant designed for average capacity of 29 mgd
Chemicals added

PRIMARY TREATMENT PLUS—Little Miami plant has flocculation ahead of settling to boost efficiency when flow is low in Ohio River.

Tests Prove

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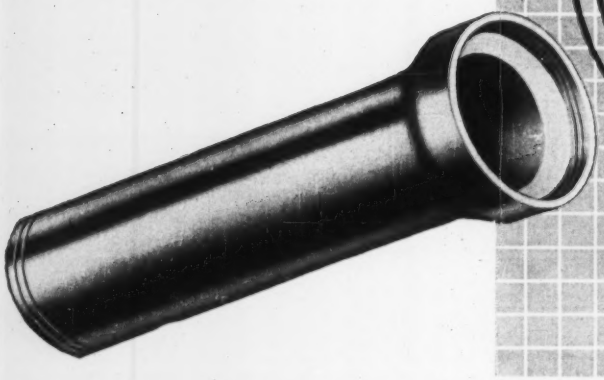

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Clay Pipe can't "oval" or squash out. Its easy-to-handle lengths *hold* their shape—wet or dry . . . hot or cold . . . under live or dead loads. Comparative laboratory tests prove there's no safe substitute for Clay Pipe. It doesn't expand or contract, never turns spongy in contact with detergents and other chemicals, can't squash out under backfill loads. Clay Pipe is proof against chemical action.

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C-953-1

ESSENTIAL • ECONOMICAL • EVERLASTING

for surcharges on permissible wastes above the strength of normal sewage. Anticipating passage of this ordinance, the sewage disposal section under Arthur Caster had questionnaires sent last year to 1,900 industries, in a survey to classify character of their wastes.

• **Industrial wastes ordinance**—All wastes placing an unreasonable burden on pumping, treatment or disposal works are in for the surcharge, which is intended to provide funds for additional capital improvements required for handling permissible industrial wastes.

"Normal sewage" is defined in this ordinance as having not more than 300 ppm suspended solids, nor 240 ppm BOD, nor 50 ppm of other soluble matter (grease or oil).

The city manager is given the right to decide what wastes shall not be discharged permissibly into the sewerage system. Industry will have the right to appeal any ruling to a team of engineer referees if dissatisfied.

The surcharge will be based on suspended solids and BOD, measured volumetrically. The formula:

$$S_c = F\,[(S_w - 2500)\,35 + (B_w - 2000)\,43]$$

where S_c is the volume of wastes subject to surcharges; S_w is pounds per mg of suspended solids in wastes as discharged; B_w is pounds per mg of BOD as discharged; F is flow of wastes discharged in mgd; 2,500 and 2,000 are respectively the pounds per mg of suspended solids and BOD in normal sewage.

Rate of surcharge will be three cents per 100 cu ft of wastes as computed by the formula above. Cost per pound for excess concentration of suspended solids and BOD (that which is above normal sewage and subject to surcharge) is 1.05 cents and 1.29 cents respectively.

The ordinance (passed Jan. 21) takes effect about the date of first contract award for the Mill Creek plant—or probably in July.

Stabilizing a township road with salt

Although ordinary salt has been used in road stabilization work for a decade or more, a full-scale demonstration of the process was conducted this spring near Elgin, Ill., about 30 miles west of Chicago.

The purpose was to demonstrate the simplicity and effectiveness of the stabilizing process to four townships (Wayne, Winfield, St. Charles and Geneva)—joint owners of a low-traffic, 20-ft road on the DuPage-Kane County line. A four-company team representing two equipment manufacturers, one equipment distributor, and a salt-manufacturer put on the demonstration; stabilizing about 2½ miles of the road in three days.

• **To reduce maintenance**—Although this stretch of old graveled road carries relatively light traffic, its maintenance had been a problem for some time. Like other loose-gravel township roads in that part of Illinois considerable gravel was lost each year under the combined action of traffic, wind, and weather.

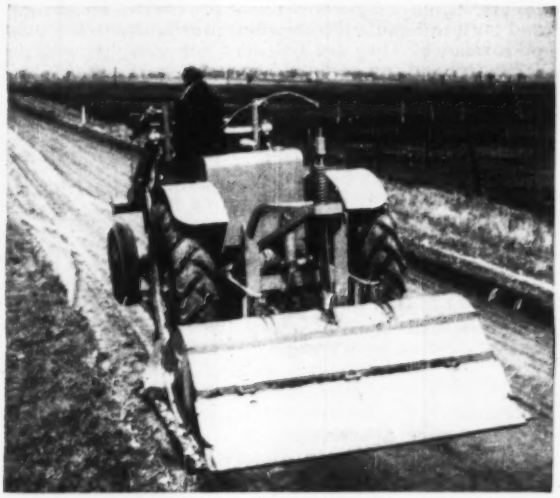
Replacement of this gravel was a never-ending problem, so the townships welcomed the demonstration, which produced a stabilized, weather-resistant road with a practically dust free surface. Chances are that the amount of maintenance required will be reasonably small for the next five years or more.

• **Construction procedure**—First step in stabilizing the road was to strengthen it by adding a 2-in. course of pit-run gravel, with over-size removed and containing sufficient fines for binder. This was followed by scarifying it to a depth of 4 in., blading to proper crown and sprinkling to build up the moisture content to near optimum. The costs of scarifying, adding the gravel, blading and sprinkling were shared by the townships.

Next a self-propelled rotary mixer-blender, 7-ft wide, thoroughly mixed the gravel and fines to a depth of 4 in.; the thickness to which the road was stabilized.

Salt was then added at a rate of 4 tons per mile—roughly ¾ lb per sq yd—by a truck-mounted hydraulic spreader. The salt and top 4 in. of gravel were thoroughly blended with the rotary mixer, which covered the 20-ft width of roadway in three single passes.

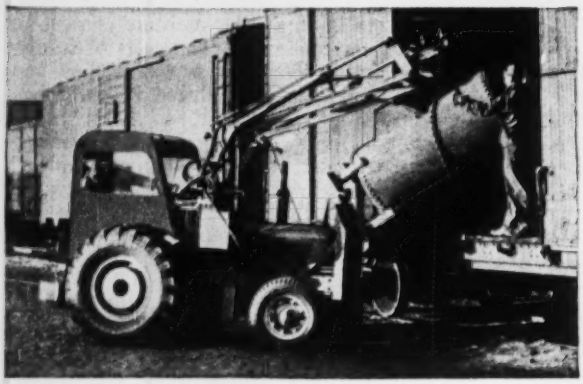
• **Simplified moisture test**—The next



ROTARY MIXER was the primary unit in a road-stabilizing demonstration, by first thoroughly mixing the previously scarified old gravel surface and later blending salt with it as the stabilizing agent.

COMMON SALT was applied at a carefully controlled rate by a truck-mounted spreader. Rule-of-thumb called for the addition of one ton of salt per mile, per inch of compacted depth for the 20-ft roadways.

Why Shoveloaders® do more jobs than any other front end loader



Another Shoveloader® *Performance Report*

A midwestern construction company* handles major road construction jobs all over the United States. They own four Lull Shoveloaders and place one on every job possible. They are used for picking up and loading broken concrete, cleaning up around bins in asphalt plant, etc. They are used, with crane hook, for handling construction of asphalt plant, hoisting auxiliary engines, setting up hoppers, and loading feeders on to trucks when sending material out to jobs. They pull tampers, power booms and pneumatic rollers, and do clean up around trucking company yards. They are also sent out on rental for snow removal jobs. These Shoveloaders have required no attention other than routine maintenance.

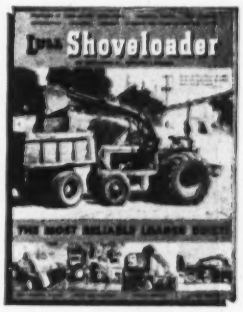
This experience of this construction company shows why Shoveloaders do more jobs than any other front end loader. It is routine to see Shoveloaders everywhere being used for a wide variety of jobs and for types of work which ordinary front end loaders just can't handle.

Shoveloader's rugged frame and powerful hoisting cylinders, with hydraulically controlled bucket, are designed and built to handle the roughest jobs with the smoothest performance. They are balanced for complete ease and safety in handling and steering.

Shoveloaders mount exclusively on dependable Case, Minneapolis-Moline, Oliver and Sheppard diesel industrial type tractors. Contact these distributors for complete information and let them demonstrate what Shoveloader can do for you.

The easily added snow and coal bucket, fork, bulldozer, crane and broom tools keep the Shoveloader busy on dozens of jobs all year around.

*Name on request.



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SPRINKLING TRUCK brought moisture content of gravel up to optimum prior to adding the salt, and followed with a moderate spray before rolling.

RUBBER-TIRED ROLLER gave final compaction, producing a reasonably smooth, stabilized surface that should require little maintenance under low-volume traffic.

and final step was rolling with an 8-wheel pneumatic-tired roller. But first the gravel and salt mixture was tested for proper moisture content. This was a simple hand test, the criterion being that when a handful of the material was squeezed into a ball it stuck together and did not crumble when pressure was released.

After the rolling had progressed to a point where the stabilized surface was securely knit together, the water tank with its pressure spray, added enough water to flush or thoroughly moisten the surface. Rolling then proceeded until all excess surface water was dispersed and the road compacted to a smooth surface.

This process of salt-stabilizing produces a road surface so tight and hard that it cannot be reshaped with a patrol grader without tearing the surface. Consequently any maintenance work required as a result of freezing and thawing or failure under traffic is limited to patching, using the same proportions of salt and gravel mixed with a rotary mixer to avoid gravel segregation.

• **Benefits claimed**—Some of the benefits claimed for stabilizing old gravel roads with salt are that the brine solution of salt and water lubricates the gravel and improves its workability. As a result the material can be compacted to a reasonably high degree of density and water tightness.

After compaction, the salts recrystallize and form a thin coating over the aggregate particles. This coating is believed to retard the movement of moisture through the mixture—thus stabilizing it against becoming too dry or too wet. It is also claimed that the addition of the salt lowers the temperature at which injurious frost action will occur.

• **Project sponsors**—The Morton Salt Co. furnished the salt used in stabilizing the 2½-mile stretch of road. The Century Engineering Co., Waukesha, Wis., supplied the truck-mounted spreader for spreading the salt, and Seaman Motors, Inc., Milwaukee, provided the rotary mixer-blender. The demonstration was conceived and superintended by L. B. Tichenor, Jr., president, C. T. & M. Industrial Suppliers, Elgin, Ill. Steffan Brothers, also of Elgin, held a contract for sprinkling and rolling.

Power potential of Oregon streams listed

Oregon's coast streams could produce 200,000 kw of firm power to supplement Northwest power supplies—if some solution were found for highway and railroad relocation and migratory fish passage problems.

In a preliminary report issued early this year by the Oregon-Idaho region engineer, U.S. Geological Survey, all available information on power potential of coast streams is listed with an eye toward future surveys and possible long-range development.

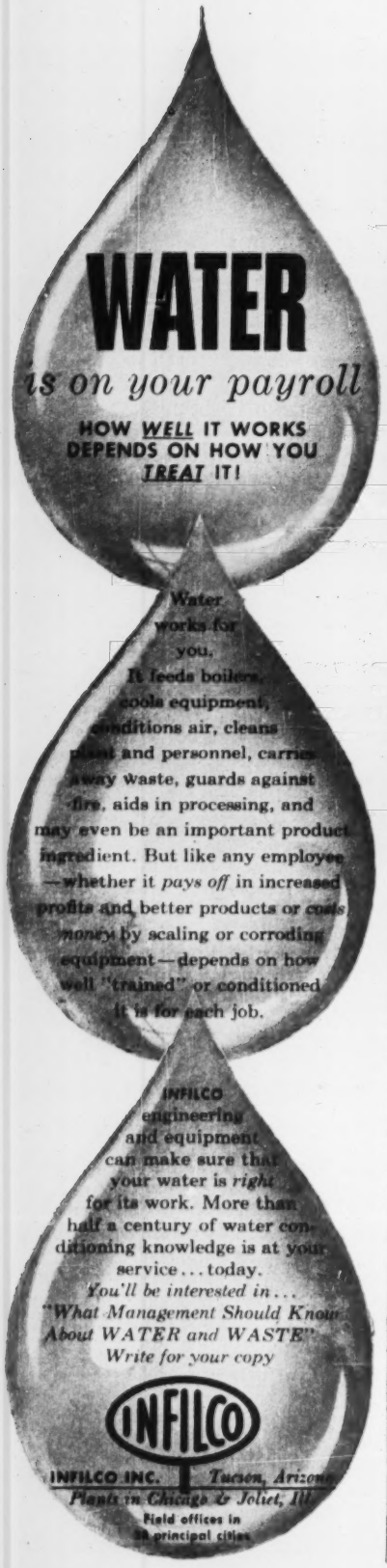
If developed for power, the coast streams probably would have their greatest value if used for firming purposes during low water season on the Columbia. Storage capacity required for year-round regulation would be nearly sufficient to enable about equal power output in kilowatt-hours during the four-month period November-February.

The biggest problem—and a costly one—is relocation of existing rail lines, highways and roads to obtain the available storage capacity.

Another bottleneck to development is the migratory fish problem. Salmon inhabit all of the coast streams and although they have declined in number, fisheries interests believe they could be restored by artificial methods, thus providing spawning grounds to compensate in part for those lost in Columbia River dam development.

	Continuous power		Nov.-Feb power		Storage
Stream	kw	kwh	kw	kwh	acre-ft
Nehalem	51,000	447,000,000	150,000	438,000,000	700,000
Wilson	28,300	248,000,000	83,000	240,000,000	250,000
Trask	17,000	150,000,000	51,000	150,000,000	300,000
Nestucca	16,000	140,000,000	47,000	137,000,000	190,000
Siletz	22,500	196,000,000	73,000	211,000,000	255,000
Alsea	27,000	235,000,000	77,000	225,000,000	1,270,000
Siuslaw	17,000	149,000,000	*33,000	*115,000,000	550,000
Coos	26,000	230,000,000	75,000	220,000,000	200,000
Coquille, So. Fk	10,800	94,000,000	31,400	91,000,000	50,000
Totals	215,600	1,889,000,000	620,400	1,827,000,000	3,765,000

*During 90% of years would have netted 155,000,000 kwh and 53,000 kw prime.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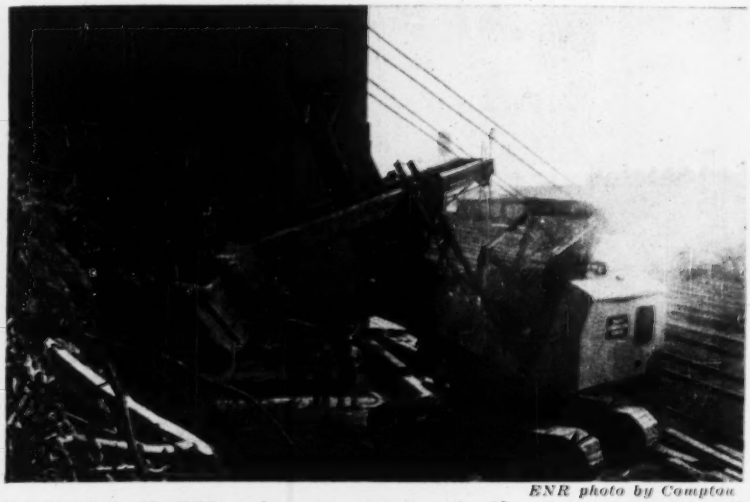
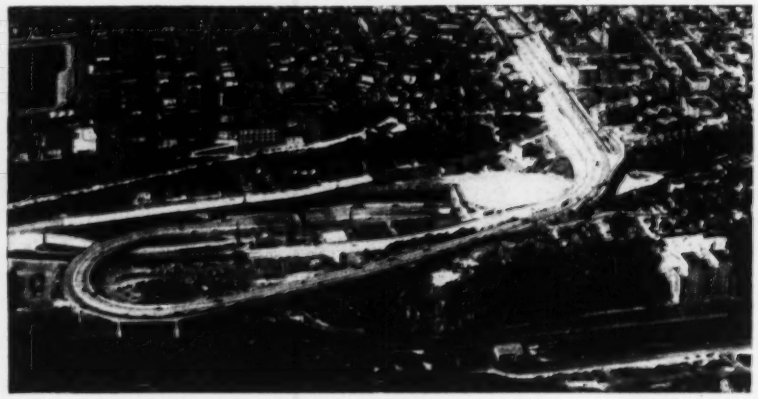


ENR photo by Compton

1 DIGGING STARTS, under court protection, for New Jersey shaft of Lincoln Tunnel's third tube under Hudson River.



2 LITTLE WEEHAWKEN bristles as Port of New York Authority ignores ordinances. Tennis courts, needed for tube, are just below center of picture.

Tennis courts go up in price as

All that stands in the way of a third tube of the Lincoln Tunnel under the Hudson River from New York to New Jersey are a couple of miles of rock and silt—and six tennis courts.

There's nothing particularly unusual about the tennis courts from an engineering standpoint—nothing, certainly, that would make them impenetrable to tunnel builders engaged by the Port of New York Authority. It's just that the courts are located on the very spot where the authority wants to put the New Jersey portal of its new tube.

The township of Weehawken, N. J., owner of the tennis courts, will sell them to the bi-state agency but its price is stiff—between $1 million and $2 million, according to latest quotations. The Port Authority has offered what it says is the equivalent of $567,000. Weehawken has ridiculed the offer, but hasn't turned it down.

The tennis courts are important chiefly as a symbol of the bitterness with which many of the townspeople of Weehawken regard the Port Authority. Created thirty years ago by joint legislation of New Jersey and New York, the authority has grown from weak beginnings to a giant, well-financed operator of tunnels, bridges and airports.

In growing, PNYA has often exercised its right of eminent domain over private property. In its dealing with

ENR photo by Compton

3 GUARDING TENNIS COURTS are Mayor Krause, right, Town Attorney Rosen, left, and Weehawken's Special Counsel in Port Authority Affairs Schroeder.

Photo by Carroll

4 CHEERING SECTION of townsfolk arrive by chartered bus for legislative hearing in shadow of George Washington Bridge, upriver from Weehawken.

town fights bi-state agency

municipalities, local ordinances often have been bypassed, but ruffled municipal feelings have been soothed by excellent public relations work, and efficient operation of facilities.

• **Special case**—But Weehawken is something of a special problem for the Port Authority. The township openly challenges bypassing of ordinances—and is using the fact that PNYA cannot seize municipal property.

Weehawken is small, both in size and population. Just under 15,000 persons live in less than three-fourths of a square mile. Growth is restricted by other township boundaries on three sides and Hudson River on fourth.

In the 30s, the Port Authority put the Jersey portals of the Lincoln Tunnel in Weehawken and built a huge spiral ramp to take tunnel traffic from river-level to the top of the steeply rising Palisades that border the river bank. In building the ramp, the Authority had to relocate town-owned athletic facilities. It put an all-purpose playing field and bleachers on the roof of the tunnel openings, and put tennis courts beside the approach to the tunnel, just below the field.

Now the Port Authority wants the tennis courts back. But Weehawken is holding out, claiming it must be paid for intangible damages suffered through location of the tunnel portals

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Shown here on a new housing project are 2 of nine Insleys which have been purchased by Mike Delucio and Son, contractors, Richmond, Indiana.

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in its township. The Port Authority has countered that the tunnel opened into Weehawken at the township's insistence, and that the original plan called for the tubes to be continued under the village.

Among indirect damages claimed by Weehawken's Mayor Charles F. Krause, Jr., and his board of commissioners are depressed real estate values in the area of the ramp—principally railroad property.

• **Sale conditions**—The asking price for the tennis courts has risen with passing months. At first Weehawken officials proposed that the Port Authority build a parking garage near the tunnel, to be operated on a cooperative basis by the township and the authority. Cost would be about $500,000.

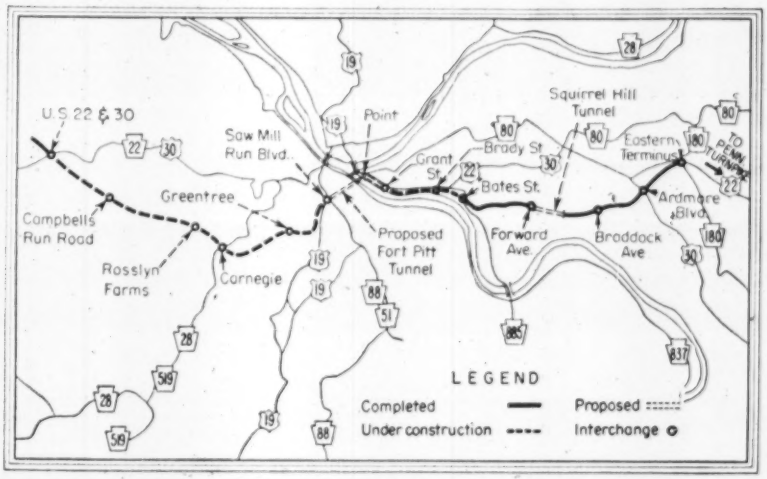
Next, the township suggested that PNYA build it a sewage disposal plant and incinerator, costing about $1 million. There was no connection between the sewage plant and the tunnel, Weehawken admitted, but the village was under citation by an interstate sanitation commission for dumping its —and neighboring Union City's—sewage into the Hudson.

When the authority turned down this proposal, Weehawken blandly announced it would accept $1.5 million in cash for its tennis courts, feeling this was its last chance to recoup for what the mayor termed the "bad bargain" made in the 30s by his predecessor, a mayor of another political party.

Meanwhile, PNYA has gone ahead with scaling of loose rock at the foot of the Palisades, preparing to sink the Jersey shaft from which a shield will be moved outward under the Hudson. Hurt and angry, Weehawken blocked work for a few days, insisting that the authority needed a building permit. Armed with a temporary injunction, PNYA started to dig.

Mayor Krause and Town Attorney James Rosen clashed with Austin Tobin, PNYA director and Walter P. Hedden, the authority's director of port development, at a hearing recently before a special legislative committee which has been looking into the squabble.

It seemed probable that the committee would throw the dispute back to the courts for interpretation of the laws governing PNYA. The township has made no formal move to kill the third-tube project. In fact, the mayor and his commissioners admit the need for the additional tunnel. Still they keep planning new deterrents —injection of the issue of riparian rights to lands under the Hudson, enforcement of dynamite ordinances, etc.



COMPLETED AND PROJECTED route of Penn-Lincoln Parkway.

Pittsburgh dedicates eastern leg of Penn-Lincoln Parkway project

The opening earlier this month of the eastern portion of the Penn-Lincoln Parkway in Pittsburgh marked the end of a five-year construction program involving most problems encountered in modern expressway design. The eight-mile route is punctuated by complicated interchanges, more than 30 bridges, the 4,225-ft Squirrel Hill Tunnel, and two lesser tunneled cross routes.

The parkway, built by the Pennsylvania Department of Highways with the United States Bureau of Public Roads as a participating agency, cost $34 million and links the William Penn and Lincoln highways with the Pennsylvania Turnpike (ENR Oct. 26, 1950, p. 35). Seven municipalities have been by-passed in this portion of the parkway, but five strategically placed interchanges will speed travel between these municipalities and the center of Pittsburgh.

Although some sections of Parkway East (local name for eastern section) have been in unofficial use for more than a year the opening has been delayed by labor disputes over electrical work in the tunnels and difficulties encountered in coping with cuts as deep as 100 ft and fills up to 65 ft.

• **Present value limited**—The completed portion, dubbed "the Glory Road to Nowhere" by local newsmen, will perform only a fraction of its ultimate purpose until the western portion of the project is completed late this year. Construction of the downtown Pittsburgh leg of the parkway necessities closing the heavily traveled Boulevard of the Allies for the next six months, dumping parkway traffic into Pittsburgh streets—miles short of their downtown goal.

• **Highway dept's greatest**—The Squirrel Hill Tunnel, costing $18 million, is the largest single project handled by the State Highway Dept., with its twin two-lane tubes burrowing 200 ft below homes, stores, and apartment houses. Each tube, offering two 12-ft lanes, a three-ft walk, and 14-ft ceiling clearance, features two continuous rows of fluorescent tubes for lighting, constant analysis of air, and an automatic alarm system tied in with a reversible ventilating system capable of forcing air into or out of the tunnel.

The wearing surfaces are of fire-clay brick set in mastic on 10-in. concrete which was poured on a 12-in. blanket of coarse aggregate.

Six transition zones of illumination allow drivers a comfortable period of adjustment while passing to and from artificial light.

Bridge design varied with the specific demands of the hilly terrain, from continuous I-beam construction, through and deck-plate girder, reinforced T-beam and arch bridges to simple slabs on smaller spans.

• **Through system for future**—With the completion of the western portion late this year the local-traffic problem will have been solved, but there remains one vital link in the east-west

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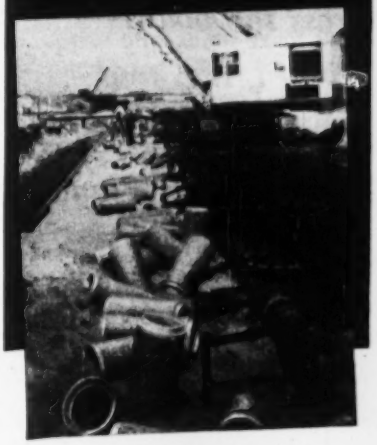

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Briefs from the YEOMANS GUARD

Across the board—— WIN, PLACE and SHOW: the Treatment Plant at Tupelo

Take an appreciative look at these figures:

Daily flow	0.999 MGD
Raw sewage B.O.D.	286 ppm
Raw sewage, suspended solids	216-ppm
Final effluent B.O.D.	31 ppm
Final effluent, suspended solids	34 ppm
Overall reduction B.O.D.	89%
Overall reduction, suspended solids	84%

These are average figures, reported from August '52 to January '53, inclusive, of operating results at the treatment plant in Tupelo, Mississippi.

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Simplicity of operation was a prime requisite; and the plant operates automatically with electrical control.

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Still more, it's a sightly plant—bespeaks an alert, heads-up well managed community.

A full report covering plant details and performance data on request.

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This claim of objectivity is, to be sure, common to practically all equipment manufacturers; but here it has added significance because Yeomans builds both centrifugals and pneumatics.

In all other respects a Yeomans recommendation is enthusiastically biased—because we are utterly convinced that Yeomans Pumps—either centrifugals or pneumatics are the best pumps built.

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system to be completed. Plans call for the construction of Duquesne Heights tunnel under the city's Mt. Washington, to connect with the proposed Fort Pitt Bridge across the Monongahela River from the Point to the Parkway West. The tunnel, now in design, will be the only toll portion of the parkway.

Theater codes relaxed; investors plan quietly

Passage by the New York City Council of ordinances amending the city's building code to permit construction of joint-purpose office-and-theater structures brought a curious shuffling of groups within theatrical circles last week. Theater owners, real estate promoters, architects and builders, who presented a united front to support the change (ENR Apr. 9, 1953, p. 50) suddenly started to act like picnickers in a sudden shower.

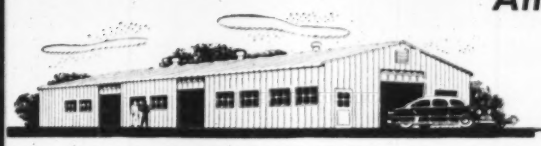
The interested groups appear to be drawing aside into small pockets of activity, reluctant for the moment, at least, to divulge their plans.

Councilman Hugh Quinn, head of the city's building codes committee and advocate of the change, passed the initiative quickly: "The 'Quinn Theater Code' has been enacted into law—now let the boys get on with their construction program," he said. Arthur Schwartz, president of the League of New York Theaters, has stated that his organization "meant business," and added, "several persons have told me that they are now willing to put up the money for theater construction and serve as the chief instruments for raising the additional capital required."

Code changes call for isolating the stage from surrounding structure with four-hour fire resistive walls and ceilings, and the inclusion of a flue extending to the roof with an area of 10% that of the stage. Other major changes in the code allow building above the stage, and the location of the theater above or below the street level (ENR Apr. 9, 1953, p. 51).

Houston rewrites building code

A new Houston, Tex., building code was presented last week by W. J. Carlin, public works engineer. An earlier attempt for a new code failed in 1946 when the proper agency for its preparation could not be agreed upon. The new document includes features from model codes, and sections covering safety requirements, inspection, smoke prevention and regulation for signs and display structures.



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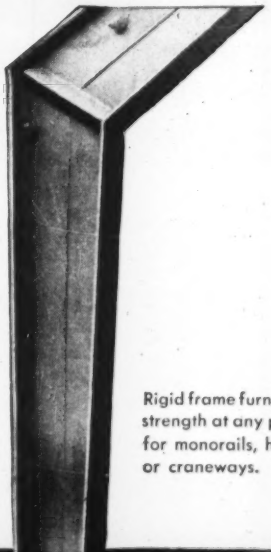

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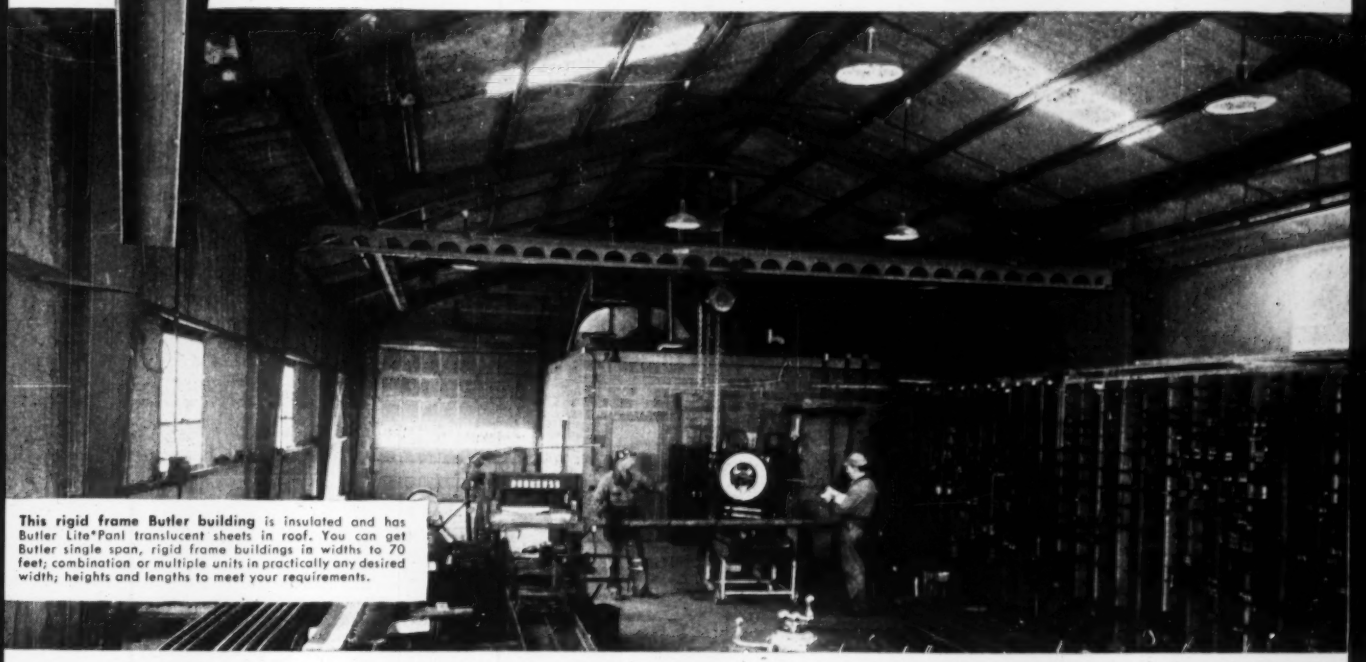

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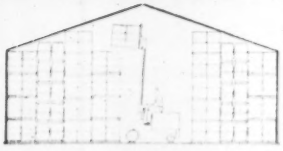

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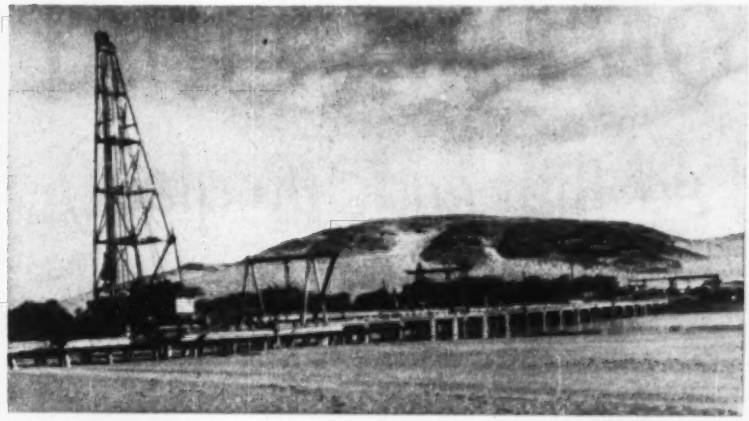


THE ORANGE RIVER BRIDGE in South West Africa was designed to offer a minimum of resistance to debris when submerged in high floods. Falsework was required only for the pile driver as precast shells for spans needed no falsework support.

Precasting fosters high stability in bridge built to be submerged

A bridge that was designed to be submerged at times of extreme high water and to stand up under the pressure of debris carried by the river when in flood was put into service about two years ago in South West Africa. Continuity, adding to the stability of the structure under flood conditions, was made possible by precasting the shells for pile caps and spans, and completing the concreting after the precast units had been set in final position. This precasting also simplified the construction operations.

The bridge crosses the Orange River near its mouth where the channel is about 3,000 ft wide and 5 ft or less in depth under normal conditions. It was built to serve an isolated mining area to which an interruption of road traffic for a week or two, during high floods, would not be serious.

Hence a decision to build a low-level bridge with short spans instead of a more costly structure with spans long and high enough to be clear of the river and the large amount of debris that it carries when in extremely high floods. These high floods occur at about seven-year intervals and bring down with them trees that between floods have grown on islands or low banks.

The deck of the new bridge was placed about 5 ft above normal water level and 8 ft below the maximum known flood crest.

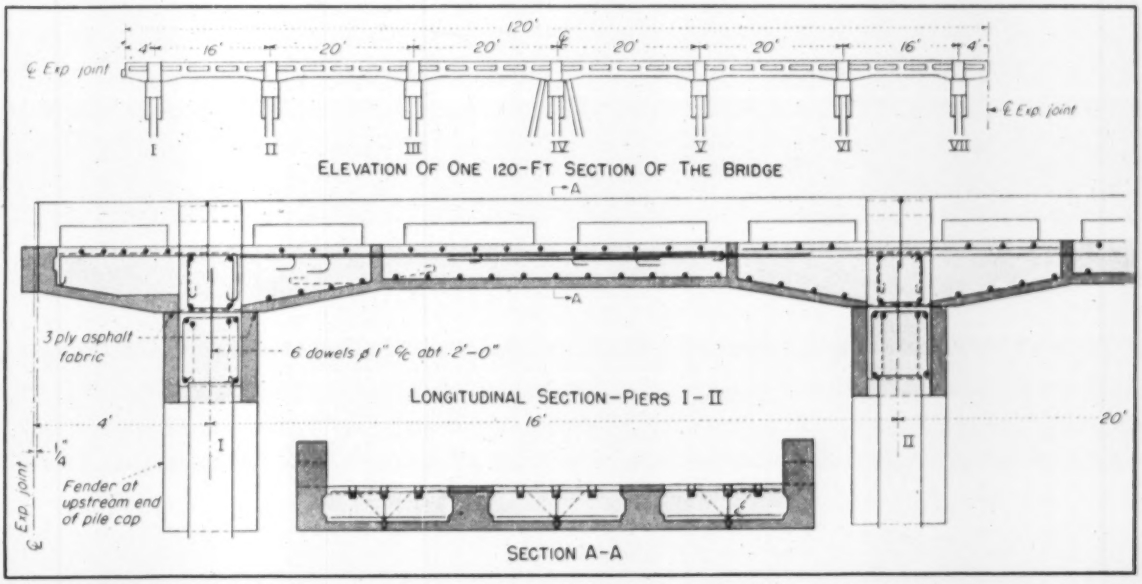
Reinforced concrete was used for the entire structure, including the supporting piles. The latter, which are mostly 45 ft. long, were driven to firm gravel or rock at depths about 20 ft below the deepest scour level.

The bridge is divided into 26 sections, each 120 ft long between expansion joints. Each section consists of four central spans 20 ft. long, two flanking spans of 16 ft, and 4-ft cantilevers at each end.

• **Designed for high thrust**—In designing the bridge that would be submerged at time of extreme flood, it was assumed that the horizontal thrust to which it would be exposed would be partly the direct force of the stream and partly the pressure resulting from a differential in water level when debris lodged against the structure. This thrust was estimated at 50 tons on each 120-ft section.

To reduce the amount of debris

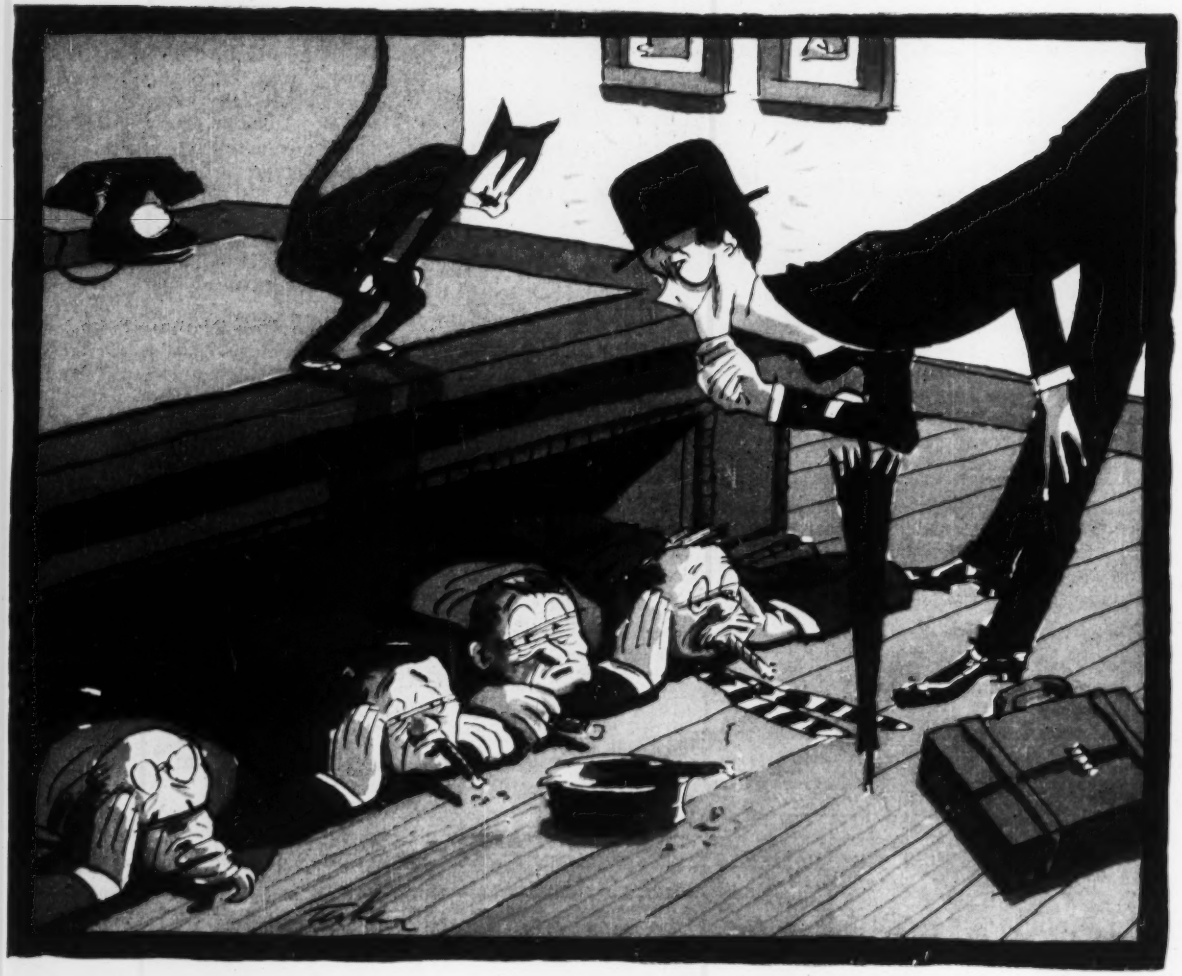
(*Continued on page 56*)



PRECASTING THE SHELLS of most of the structural elements of the Orange River Bridge made it possible to provide an unusual amount of continuity in the structure. Dark shading indicates precast concrete. Bridge is made up of 26 of the 120-ft sections.

THE COMPANY THAT

(A sad ad that ends up glad)



AMERICAN MUTUAL

Service from salaried representatives in 78 offices! Savings from regular substantial dividends!

FELT RATHER LOW!

by Mr. Friendly

I saw a sight I could hardly ignore . . .
The Board of Directors lay on the floor!
The President sighed, "You might as well know
We're somewhat depressed. We feel rather low."

He sobbed in the rug, then said with a frown,
"Accidents seem to have gotten us down . . .
Morale, production and profits are at
A low that has left us flatter than flat!"

That's when I showed them, right then and there,
How we had one company walking on air . . .
So accident free* that their spirits rose
And they had to tie anchors onto their toes!

*HOW WE SAVED PEOPLE, PROFITS AND PRODUCTION

(An American Mutual Brief Case)

Company: New England Wire Manufacturer.

Problem: Increasing number of accidents, high insurance rates, poor production, due to 325% business expansion in 2 years.

Solution: Our job-safety analysis program helped reduce accident frequency 40% . . . reduced insurance costs, production costs!

Offer: For complete details on this dramatic safety engineering case study, plus 6 other outstanding accident-control achievements, write for "The Case Book of Safety Engineering at Work," American Mutual Liability Insurance Company, Dept. O-121, 142 Berkeley Street, Boston 16, Mass.

©1955 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

Ask the man behind the gun . . .

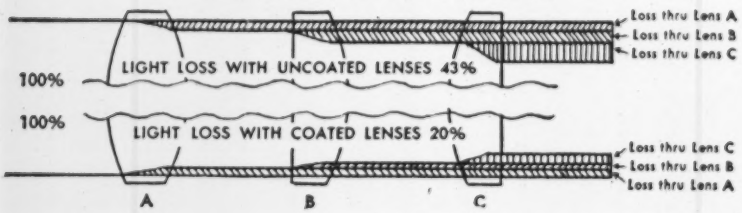
Coated optics give you this — not this

Model 3000, $195.00,* complete with tripod.

with a White Universal Level-Transit

HERE'S what coated optics can do for you. You can put in a full day without eyestrain or headache. There's less chance for a mis-reading. You get a clear, sharp sight — not a fuzzy image. What's more, you get your reading in far less time. Check this diagram. See for yourself how coated optics pass through up to *40% more light,* provide a clearer image contrast.

COMPARISON OF LIGHT PASSAGE



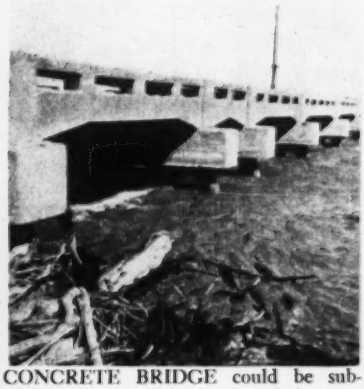
And there's more!

White Universal Level-Transits also offer you internal focusing, guarded vertical arc and ball bearing race which insures smooth operation, even in sub-zero temperatures. Check one out on your next trip. You'll soon be convinced a White can make your work faster, easier, more accurate. Write for Bulletin 1053. DAVID WHITE COMPANY, 315 W. Court Street, Milwaukee 12, Wisconsin.

DAVID WHITE COMPANY

Expert REPAIR SERVICE on all makes, all types of instruments

*Prices subject to change without notice.



CONCRETE BRIDGE could be submerged as much as 8 ft below rising flood waters without damage to the structure.

held by the bridge, the structure was made as low as possible; curbs of reinforced concrete one foot high were used in place of bridge rails; and each pile bent was provided with a fender cast integrally with the cap and extending down close to bed level. Each bent has a batter pile at the down stream end, to give the structure added stability against downstream movement, and the expansion joints are offset 4 in. in a vertical plane at four points to provide interlock against horizontal movement.

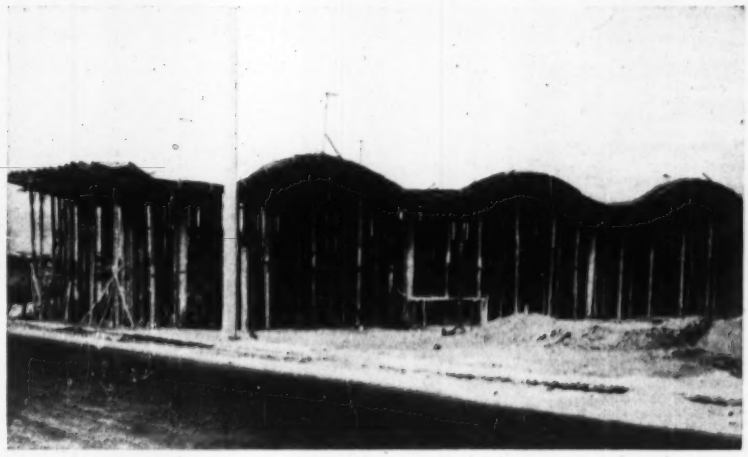
• **Precast construction**—Shells for the deck spans in each 120-ft unit and for the pile caps were precast in a casting yard on one bank. Some of the reinforcing for the cast-in-place concrete also was set in the casting yard. All precast units were set by two gantry cranes working from the bridge itself. Thus, no falsework was needed for erection purposes or to support forms for concrete placed in the structure.

Concreting to complete the structure was done in three stages. After all reinforcing steel in the pile caps had been set, they were concreted. Then concrete was placed in the deck sections over the pile bents to provide continuity over the supports, and three days later, the remaining concrete in the deck was placed.

The accompanying drawing shows what sections were precast and which were cast in place.

The bridge was built for the Consolidated Diamond Mines of South Africa, Ltd. The concept of the bridge was evolved by A. Roydon-Harrison and J. Bone, consulting engineers of the Anglo-American Corporation of South Africa, Ltd. The bridge was designed and built by Christiani & Nielsen (S.A.) (Pty), Ltd., of Cape Town, for which K. H. Sorensen is technical director.

Arched Indian bungalow and . . .



Mexican gas station roof are . . .

Unusual types of concrete arch

Out-of-ordinary uses of concrete arches reported from such widely separated areas as India and Mexico are evidence of drives for simpler, quicker construction methods.

• **In India,** an arched roof of corrugated concrete, formed by placing the concrete on a jute fabric stretched over light falsework, has been developed for use in constructing inexpensive bungalows.

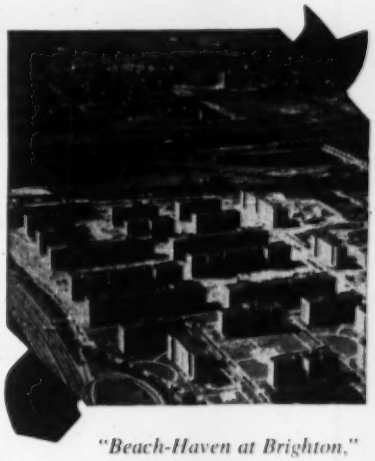
When concrete is placed on the jute fabric, the fabric sags between the falsework ribs supporting it causing the corrugations in the arched roof. No reinforcing is used in the thin-shell structure, the corrugations lending strength to the arch. A structure of 60-ft span built in this fashion has been found to withstand a wind pressure of 120 mph with a total deflection of ¾ in. 70% of which deflection was elastic.

The Indian bungalow roof was designed by Kurt Billig, director of India's Central Building Research Institute.

• **Continuous arches**—An undulating continuous span roof of concrete arches reinforced with wire mesh is being used extensively in small one-story building construction in Mexico. The arches, supported on wooden or concrete pillars, make possible a lighter concrete roof than would be required for flat slab construction.

9,000

Koppers Pressure-Creosoted Piles Support 31 Six-Story Apartment Buildings



"Beach-Haven at Brighton," located in Brooklyn, N. Y., is one of the huge housing projects of the Fred C. Trump Construction Company of Brooklyn. It consists of 31 six-story housing units, providing 1,860 individual apartments of 2, 3½ and 4½ rooms. The Trump Construction Company writes, "We have driven close to 10,000 creosoted piles on our Beach-Haven project . . . length 30 to 50 feet, with an average of 38 feet depth driven, at a cost of approximately $700,000. We are pleased to advise however that a very substantial saving was effected by using Koppers creosoted wood piles over any other form of pile."

Engineers will tell you that Koppers Pressure-Creosoted Foundation Piles are being used on more and more of the industrial and commercial "big jobs." They insure lasting protection against termites, fungi, and acids in the soil. They are readily available at Koppers wood treating plants, and actually cost less than other permanent pile material.

For complete details on price and delivery, contact your nearest Koppers office or write:

KOPPERS COMPANY, INC.
Wood Preserving Division
Pittsburgh 19, Pennsylvania

KOPPERS **PRESSURE-TREATED WOOD**

THE BIG PUSH IS ON!

The big machines are on the move, swarming over the land and clearing the way for new roads, new buildings, new construction of every kind. It's a big job, but it's a job made much easier by Hyatt Roller Bearings. Hyatt bearings are built into construction equipment at vital load-carrying positions, to fight friction wherever shafts turn. And, Hyatts are the ideal bearings for the job because they're engineered for bigger loads, for longer life, and for *lowest maintenance costs!* Check the bearing specifications on equipment you buy.

"If it's built with Hyatts it's built to be the best!"

HYATT ROLLER BEARINGS

HYATT BEARINGS DIVISION • GENERAL MOTORS CORP. • HARRISON, N.J.

MEN AND JOBS

Johnston is picked by PAR to head broad drive for good roads

The National Conference for Adequate Roads, better known as "Project Adequate Roads" or PAR, strengthened its leadership by putting in a permanent chairman at a special meeting in Washington, D. C. last week. He is Clem D. Johnston, a Roanoke, Va., warehouse operator who is a nationally known business leader.

Johnston's appointment fills a need for a full-time executive to give central direction and responsibility to PAR's drive for adequate roads.

That's why they picked Johnston, who is a vice-president of the U. S. Chamber of Commerce and has served many other business associations and civic groups.

• **Committee to stay**—PAR's temporary operating committee is expected to continue as an advisory board to Johnston. It includes: L. S. Wescoat, chairman of the American Petroleum Institute; Arthur M. Hill, president of the National Association of Motor Bus Operators; and Albert Bradley, chairman of the National Highway Users Conference. Several other members will be added.

The selection of a national chairman was counted on to stop any more defections from PAR. In the last year three member organizations have withdrawn, largely because they did not want a coalition without any fixed responsibility speaking for them. The secessionists were the Construction Industry Manufacturers Association, the American Road Builders Association, and the American Automobile Association.

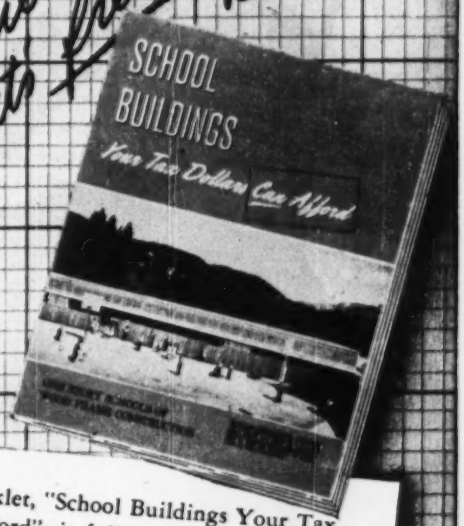
That leaves 36 member groups as active participants and a total of fifty groups that are supporting PAR's program at the present time.

Harrell heads new unit for development analysis

Because of demands from clients for economic analysis in technical and production fields, the Southwest Research Institute has set up an industrial economics department. This move is of significance to construction men because recommendations made by the new department will have a major influence on industrial and government plans for future construction activity.

Harold Vagtborg, president of the

Bob—
Suggest you write Teco for their School Buildings book today. It's full of good data and it's free! Bill



Yes, this booklet, "School Buildings Your Tax Dollars Can Afford", is full of data on meeting crowded school conditions safely and economically with

ONE-STORY SCHOOL BUILDINGS

of timber, using Versatile TECO TRUSSED RAFTERS, with Wedge-Fit connectors, and Trip-L-Grip framing anchors.

Timber trusses and framing, ready to erect, are available for prompt delivery by timber fabricators in all sections of the country.

Get started now — send for TWO booklets — they're FREE.

free ✓

TIMBER ENGINEERING COMPANY 1319 18th STREET, N.W. WASHINGTON 6, D. C.

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Please send the FREE booklets, "School Buildings Your Tax Dollars Can Afford" and "Wood Frame Teco Trussed Rafters."

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WELLMAN
easy handling of large stones

• Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 4½ foot jaw spread. Other capacities available.

Want Facts? Send for free descriptive bulletins.

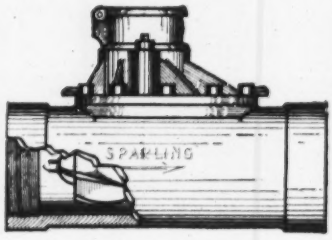
THE WELLMAN ENGINEERING COMPANY

7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

STONE AND WOOD GRABS • CLAMSHELL, DRAGLINE, CUSTOM-BUILT BUCKETS

NEW Catalog READY for YOU—

To know the latest in Water Measuring and Control equipment, replace the old Sparling catalog in your files with the comprehensive edition just off the press! Please say how many if you need more than one copy.



Bulletin 313 is yours for the asking.

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SEATTLE 1.....1932 First Ave.
626 Broadway.....CINCINNATI 2
101 Park Avenue.....NEW YORK 17
1932 First Avenue.....SEATTLE 1
6 East 11th St.....KANSAS CITY 6, MO.
DALLAS 1.....726 Reserve Loan Life Bldg.

institute, has named C. A. Harrell as chairman of the new department. Harrell is an experienced city manager and an authority on industrial development. Says Vagtborg: "We needed a man trained in engineering and economics, as well as in public administration."

The institute is a non-profit organization that specializes in scientific research. In helping work out development programs for industrial, commercial, and government clients, it has often been necessary to call other groups for services in the fields of transportation, finance, administration, and other nonscientific fields. Examples of past jobs in this field: an evaluation of the industrial potentialities of Cuba; and a survey of West Germany's capacities for non-profit industrial research.

Careers . . .

• **Appointed—John Walker Little,** architect, has joined the Cleveland engineering firm of Fischer & Associates. He'll take charge of the design and administrative side of all construction work . . . **William E. Corgill** has been named traffic engineer on the staff of the accident prevention department of the Association of Casualty & Surety Companies.

• **Local government appointments—John A. Bruce** succeeds **Henry A. Barnes** as Denver traffic engineer.

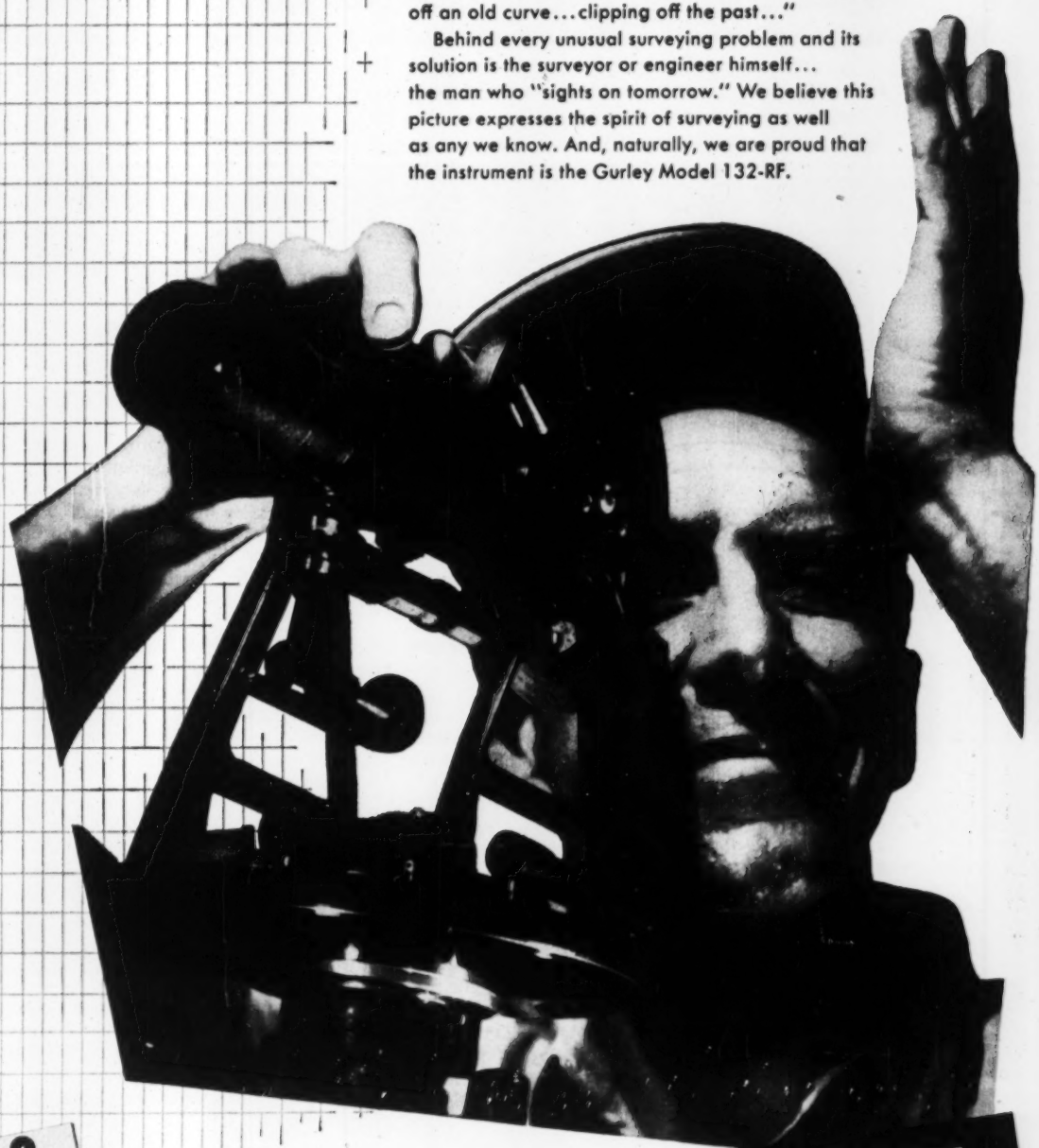
• **Elected—John R. Downs,** since 1945 executive secretary of the Mason Contractors Association of Cook County, Ill., has been named executive vice-president of the Chicago Metropolitan Home Builders Association . . . **Ben J. Small** has been elected president of the Metropolitan New York Chapter of the Construction Specifications Institute . . . **Peter J. Kranenburg** has taken office as president of the New York Chapter of the state society of Professional Engineers.

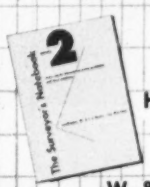
• **Honored—Carlton S. Proctor,** president of the New York engineering firm of Moran, Proctor, Meuser & Rutledge, received the merit cup from his Princeton University class of 1915 . . . **Robert W. Abbett,** of Knappen-Tippetts-Abbett-McCarthy, New York consulting engineers, received an honorary doctor of science degree from Gettysburg College . . . **Alfred L. Parme,** of the Portland Cement Association in Chicago, received the Fuertes graduate medal of Cornell University's school of civil engineering.

The Surveyor's Notebook

"What's this surveyor doing?", asks the Santa Fe System Lines in national magazines and newspapers. "He's sighting on tomorrow...chipping off an old curve...clipping off the past..."

Behind every unusual surveying problem and its solution is the surveyor or engineer himself... the man who "sights on tomorrow." We believe this picture expresses the spirit of surveying as well as any we know. And, naturally, we are proud that the instrument is the Gurley Model 132-RF.





Have you received your copy of the **new** "Surveyor's Notebook—Series 2"? It recounts the unusual surveying problems and solutions of many forward-looking field men. Write for your free copy.

W. & L. E. Gurley, Union Plaza, Troy, New York.

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Surveying and Scientific Instrument Makers
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"4D"
IS THE REASON
COMPLETE
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It's the simple formula that explains why Complete Wellpoint Systems de-water successfully when other methods fail. "D" means diameter of the wellpoint. "4D" means that you get 4 times more drainage on [illegible] the well-

The [illegible] Complete [illegible] gives you this 4-to-1 advantage. As part of the Complete System—or as replacements on your present equipment, no other wellpoints can equal this Complete satisfaction. Get all the facts.

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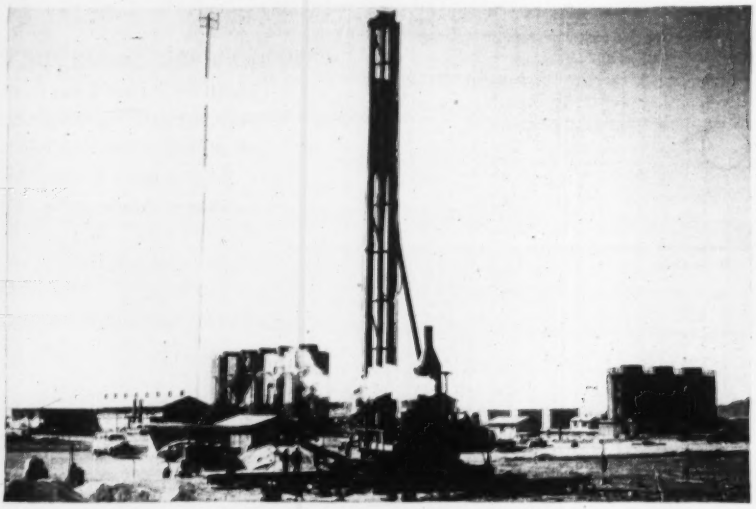
FOR SALE OR RENT



Pile drivers used as compactors

Pile driving equipment was used to compact loose sand so it would support a natural gas pipeline compressor building at Blythe, Calif. Owned jointly by the Southern California Gas Co. and the Southern Counties Gas Co., the station is on a Texas-California pipeline.

The site is underlain by loose fine sands. It was anticipated that compressor vibration would cause the building to settle on those sands unless steps were taken to precompact the subsoil. The adopted precompaction technique was sand piling.

These piles are 16-in. dia columns of compacted new sand. During their placement existing sand is displaced and forced into the surrounding formation, densifying it. Vibration of driving assists in obtaining the compaction effect.

While sand piles have been used for this purpose in Europe, it is believed that this is the first use of such piles in the United States.

A total of 954 piles on a 4 x 5-ft spacing were driven in the 80 x 208-ft site. Depths varied from 20 to 40 ft. The limits of the area compacted by pile driving extend beyond the compressor building in order that pile driving for future extensions will not affect the structure.

The pile driving procedure was as follows: Using a heavy, single-acting steam hammer, a steel casing of 16-in. dia with a concrete plug at the bottom was driven into the earth. Inside this casing was a core with a closure plate at the lower end that fitted snugly into the casing. Both casing and core were driven to the required depth and resistance, the core removed and the casing filled with sand. The core was then placed back on top of the sand and the casing extracted by a system of lines pulling over the top of the core. The concrete plug remained in the ground. The core was forced down at a rate that compensated for the upward movement of the casing. Thus as the casing was withdrawn, sand was forced out to fill the volume displaced in driving the casing.

Plans for this method of compaction were developed by Stone and Webster Engineering Corporation. Modifications in pile driving procedures were developed by Western Foundation Corp., New York.

17-year test of pine-fir watershed management

A 17-year test of management of pine-fir type of watershed lands has been voted by the Salt River Valley Water Users Assn. in Arizona with the purpose of increasing water yields.

Tests will be at the U. S. Forest Service Southwestern Forest and Range Experiment Station 40 mi north of Globe, Ariz. It is estimated that about $30,000 will be required.

Runoff from three sections on which records have been kept since the 30s will be studied under the project. It is pointed out that more runoff to the Water Users' reservoirs will mean a firmer irrigation and electrical generation potential for the association.

OPERATOR REPORTS

Production up — Maintenance down

Twenty of these Allison TORQMATIC-equipped trucks are working 21 hours a day hauling 34-ton pay loads of coal and overburden over 7½% grades.

The Wadesville Production Company operates 20 Allison TORQMATIC-equipped Euclid rear-dump trucks hauling 42,000 tons daily in its strip mine near St. Claire, Pa. These trucks boost production by making round trips 25% faster than the mechanical-drive units they replaced.

This operator's records show TORQMATIC DRIVES outlast mechanical drives — maintenance time and costs are down too. At routine overhaul periods, mechanics change out the TORQMATIC DRIVES in 2 hours less time than they change out a mechanical drive.

You, too, can cut your heavy-duty equipment operating costs by specifying Allison TORQMATIC DRIVES the next time you buy. Ask your equipment dealer, manufacturer or write:

ALLISON *Division of* GENERAL MOTORS
Box 894EE, Indianapolis 6, Indiana

ALLISON TORQMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

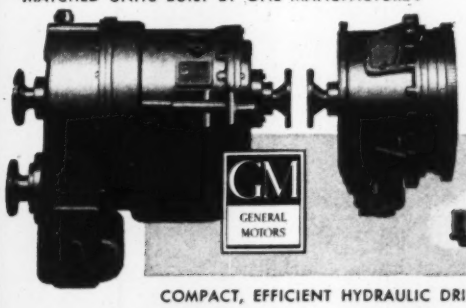
**Quick-shifts* at full throttle with fingertip hydraulic control.

**Holds* power to load at all times — no clutch pedal to push — no gearshift guess.

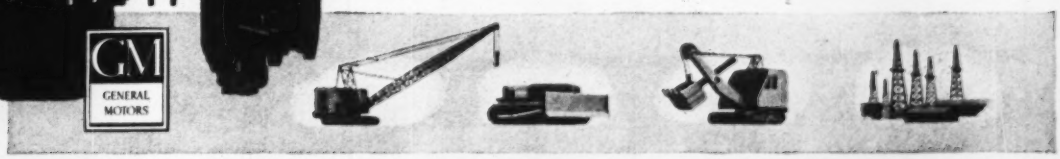
**Cuts* maintenance cost by absorbing shock — eliminates engine lugging — prolongs equipment life.

**Only* torque converter-transmission team designed to work as a unit and built by one manufacturer.

MATCHED UNITS BUILT BY ONE MANUFACTURER



Allison TORQMATIC DRIVES



COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES * TRUCKS * TRACTORS * SHOVELS * SCRAPERS * DRILLING RIGS

HOLLOWS COST MONEY!

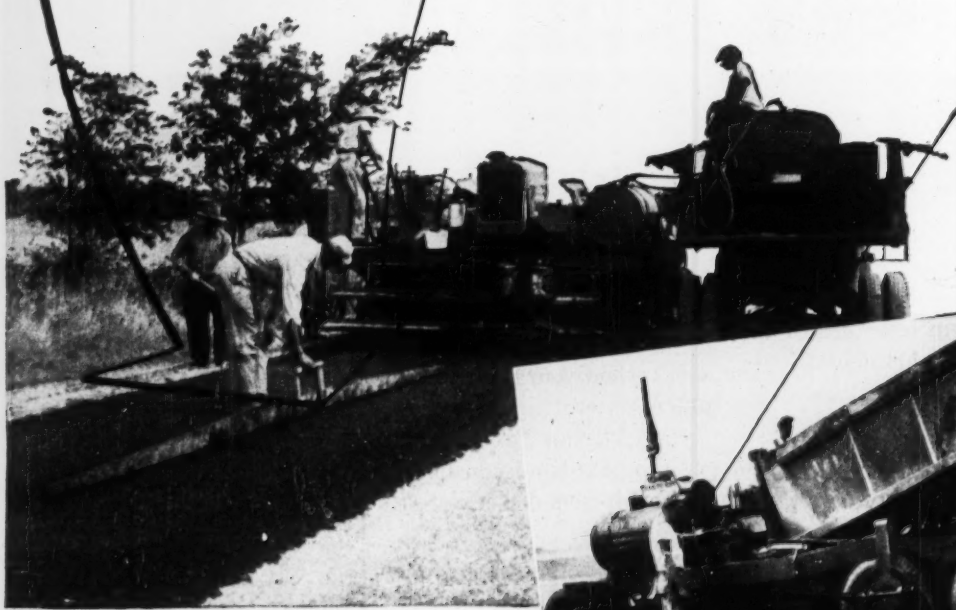
If you hold to within 5% of grade (that's less than ½ inch on a 9 inch thickness of material) you are putting almost 176 cu. yds. of extra material in every mile of road. You estimate what those 176 yds. cost you in your area . . . Hollows cost money!

The Adnun equipped with the Fluid Level will materially reduce waste in spreading stone and other base course materials and in laying asphalt base and surface.

With the Adnun Fluid Level you supplement the amazing accuracy of Adnun Continuous Course Correction with a gauge control so positive that you can take out the dips that won't show under the straight edge. Continuous Course Correction removes the short hollows and combines with the Fluid Level to give you results ordinarily associated with long wheelbase.

With the Adnun Fluid Level you have full control from subgrade to finished surface. With each course laid by the Adnun to an absolute plane and to accurate thickness *all the way* across the road and for every mile, better density and longer road life with less waste of materials is a sure result. With the Fluid Level you should beat that 5%.

Don't throw away material! Figure closer with the Adnun and the Fluid Level. If you haven't seen the booklet, "Put a Level on your Roads," ask for it.



* The Fluid Tells you it's Level. A turn of the hand adjustment wheel holds a positive grade. Every mile of road can be uniform as to thickness and density.

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OBITUARIES

Walter S. Finlay, Jr., 70, executive vice-president of the J. G. White Engineering Corp., died in New Rochelle, N. Y., June 17. He was a 1904 Cornell graduate. With the White concern he served over a broad range of engineering and consulting projects in the United States, the Middle and Far East. Recently he had been closely identified with work in Iran, China and Indonesia. He was a consultant to the Atomic Energy Commission, and in 1950 served on a review committee of experts that endorsed the selection by the commission of a 250,000-acre tract in South Carolina for the production of materials to develop a hydrogen bomb.

W. A. Bandy, 66, Austin, Tex., died June 3, in El Paso. He was field instructor in the extension service of Texas A&M College, specializing in water and sewage treatment.

Henry C. Young, 69, a retired civil engineer, died June 6 in Buffalo, N. Y. He began in the engineering department of the Erie Railroad. He was a member of the first engineering group on construction of the Panama Canal. He also worked on construction of the Pennsylvania Railroad tunnel under the East River in New York.

W. Vance Baise, 56, former chief engineer with the North Carolina State Highway Commission, died in Raleigh, June 13. He was graduated from North Carolina State College and began work with the highway department as a draftsman in 1920. He rose steadily as squad leader, assistant engineer, and then became chief draftsman in 1922. He became assistant state highway engineer in 1932 and acting chief engineer in 1934. In 1935 he became chief engineer until 1949.

J. Harvey Minton, 67, active in the building construction field in Cleveland, Ohio, for 33 years, died June 13. He was the owner of the Minton Construction Co., Cleveland, and formerly had been a construction engineer for the Pennsylvania R.R. in Pittsburgh.

Brig. Gen. Ernest Graves, 73, a member of the Mississippi River Commission, died in Washington, D. C., June 9. He was No. 2 in the West Point class of 1905. In 1931 while a colonel in the office of the Chief of Army Engineers, he was named chairman of the Interoceanic Canal Board which studied the possibility of constructing a waterway across Nicaragua.

"We loaded trucks without booming or moving the crane..."

Yes—now you can do things with clamshells you never did before, and do them right from the cab—with the

"Tag Master"

TOPS IN BUCKET CONTROL

No man needed at the truck to guide the bucket that's TAG MASTER controlled. With this tag line pull (UNIFORM at all levels and adjustable to any job) you can turn, spin, snub or cast your clamshell direct from the cab. You get EXACT spotting, with a light drop that adds years to bucket life. In addition, the TAG MASTER can be used as a dipper trip. Send coupon now for more details of this combination tag line winder and dipper trip—and send it now.

1. Less Booming
2. Less Swinging
3. Less Travel
4. Control of clamshell
5. Can be used as a Dipper Trip
6. Increased performance
7. Low cost operation

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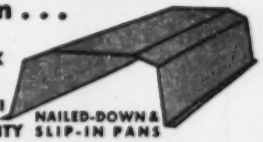
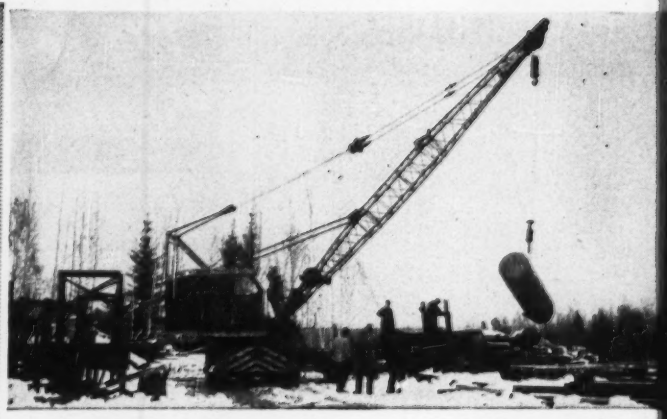


Ask for Catalog No. 3100

GATEWAY ERECTORS, INC.
3233 W. Grand Ave., Chicago 51, Illinois

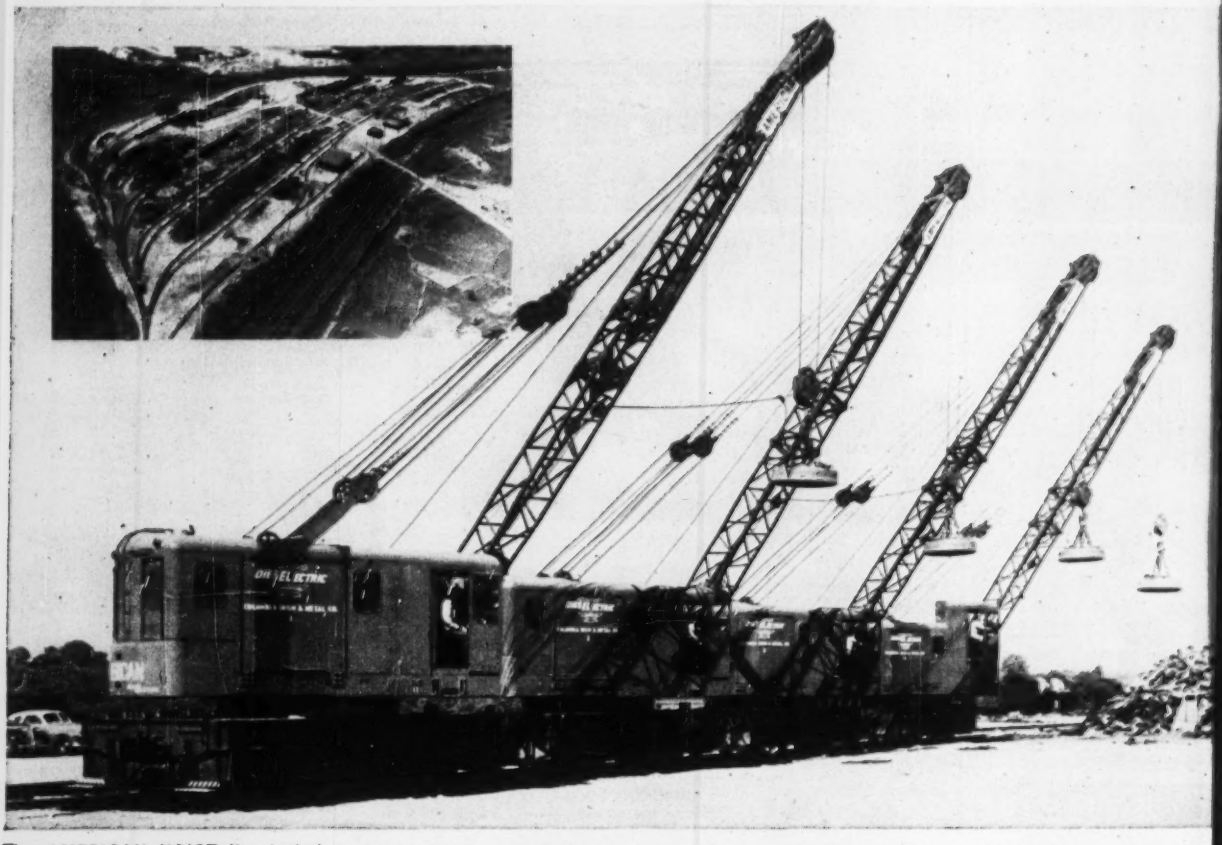
Pictures from Industry

These are excerpts from stories in the current issue of American Hoist & Derrick Company's house magazine, the American Crosby Clipper. If your business involves the use of hoists, derricks, locomotive cranes, revolver cranes, Crosby Clips or other equipment in our line, why not let us put your name on the mailing list. Use coupon on right hand page, to start with the current issue.

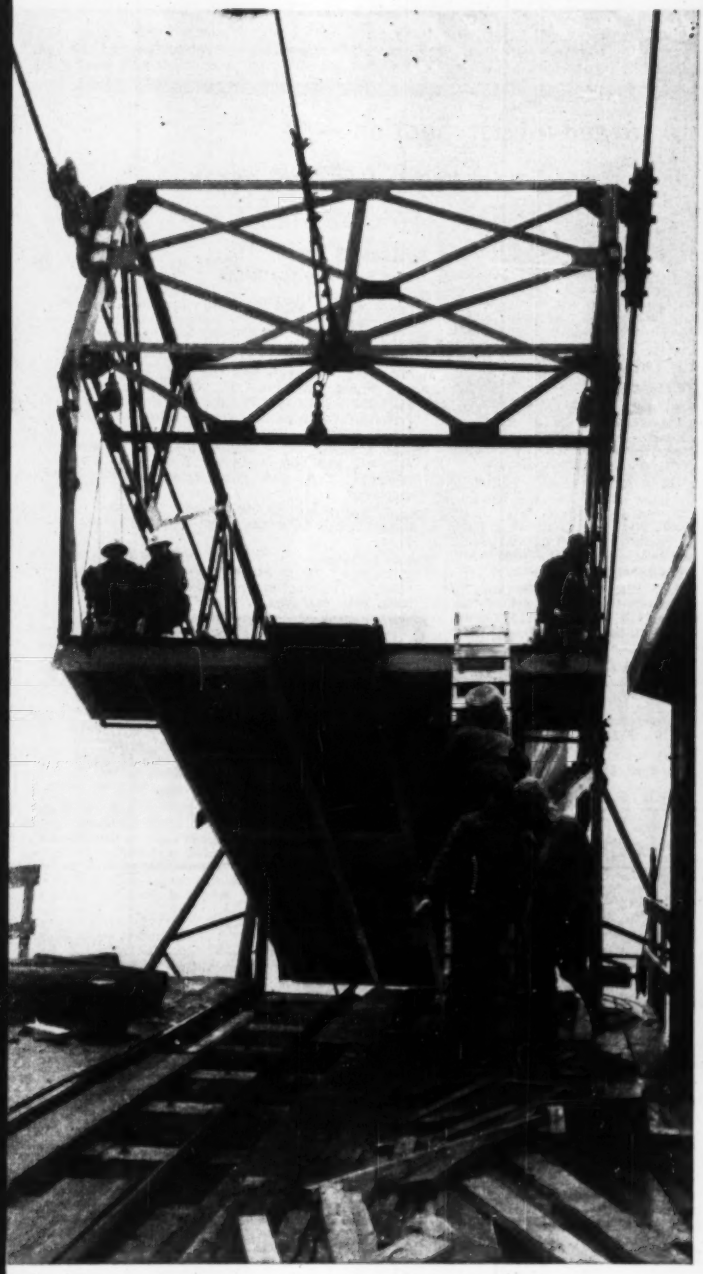


Building for the Taconite Age. Whole new towns are rapidly springing up near Minnesota's Iron Range, where tomorrow's steel will be mined from low grade taconite ores. A symbol of the superbly modern equipment to be used is this American 375 Truck Crane, shown handling materials for processing plant at Babbitt, Minnesota.

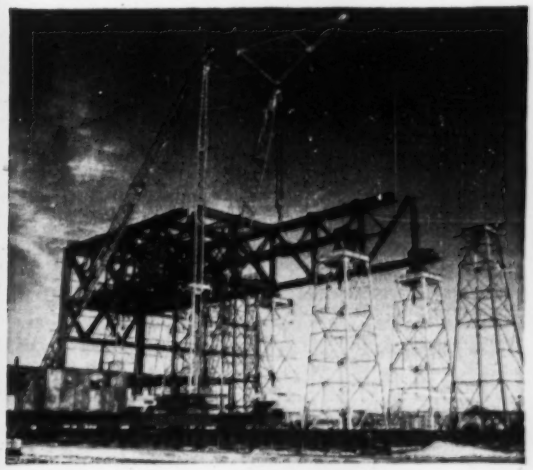
Locomotive cranes in super scrap yard. In a vast 28-acre area at Youngstown, Ohio, Columbia Iron & Metal Company operates the great and efficient scrap preparation yard shown in inset below. To handle these vast tonnages of metal, Columbia operates five 40-ton American DieseLectric Locomotive Cranes with 55" magnets. All loading and unloading, plus car switching, is handled by these swift and tireless cranes.



The AMERICAN HOIST line includes: Hoists • Derricks • Locomotive Cranes • Crawler Cranes • Truck Mounted Cranes • Revolver Cranes • Roofers Hois



How to dig a hole 5,000 feet up. Near Kemano, British Columbia, this immense aerial tramway is raising men, materials, and even giant tractors and penstocks four-fifths of a mile above the canyon floor. The project underway is a dam and power plant to furnish electrical power for new aluminum production. The need for absolute safety with loads up to 20 tons, speeds up to 500 feet per minute and pitch up to 46°, dictated use of Genuine Crosby Clips for all wire rope connections. Eight Crosby Clips can be seen on center line of tramway carriage at left.



$4,500,000 Balancing Act. To erect a new $4,500,000 air force hangar at Wichita, Kansas, John F. Beasley Construction Company used this special 50-ton traveling American Derrick. Steel framing for the hangar was balanced, piece by piece, as construction proceeded in two directions from this central section. The derrick was powered by an American Model 140 4-Drum Diesel Hoist with torque converter and swinger.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

SOON LETS CONTRACT—BUILDINGS

Mass., Fitchburg—Y.M.C.A.—Fitchburg Young Men's Christian Assn., Intervale Rd., soon lets contract, Y.M.C.A. bldg., Wallace Ave. $700,000. Tessier & Maloney, 220 Dwight St., Springfield, archts. CD 5/25.

Mass., Sterling—CHURCH AND RECTORY—St. Richards R.C. Parish, Diocese of Worcester, Chancery Office, 1 Tuckerman St., Worcester, soon lets contract church and rectory. $300,000. James J. O'Shaughnessy, 80 Boylston St., Boston, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Spectre Constr. Co.**, 18 Newbury St., Boston, Mass. LB. $289,160. est. $300,000. married and enlisted men's quarters, married officers' quarters, Naval Air Station, Spec. 31258, BRUNSWICK, ME. First Naval Dist., 495 Summer St., Boston, Mass. Bids June 9. CD 5/15.

Sherry Corp., 823 Davol St., Fall River, Mass. LB. $125,000. est. $80,000. repairing, patching, street work, FALL RIVER, MASS. City, Dpt. P. Wks., City Hall, Fall River, Mass. Bids June 4.

▲ **C. L. Guild Constr. Co. Inc.**, 94 Water St., E. Providence, R. I., CA. $1,179,073. est. $1,200,000. Contr. 2-L, lateral sewers, EAST PROVIDENCE, R. I. Town, Bd. Sewer Comrs., Town Hall, East Providence, R. I. Bids June 1. CD 6/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Braintree Lakeview Realty Co.**, (Campanelli Bros.) 19 E. Evergreen Rd., Natick, Mass. Owner Builds. est. $1,750,000. 175 RESIDENCES, Hartford St., NATICK, MASS. R. I. Williams, 36 Haviland St., Wollaston, Mass., archt.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Edward Acker Corp., 128 E. Broadway, Patchogue, N. Y. and **South Shore Contg. & Dredging Corp.**, 100 West Ave. Patchogue, N. Y., LB $357,536. est. $525,000, beach protection, West Jetty Shinnecock Inlet, B. P. 53-52. Suffolk Co. NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids June 11. CD 5/20.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Maxim Kranz, 447 Ft. Washington Ave., New York 33, N. Y., LB $196,489, est. $245,000. Essex-Willsboro, Pt. 2, SH 1641, Willsboro-Keeseville, Pt. 2, SH 8238. 6.76 mi. FARC. 53-50, Essex Co.;
L. G. DeFelice & Son, Inc, Nettleton Ave., North Haven, Conn., LB $3,444,142. est. $4,184,000, New York State Thruway, Hudson Sect. Subd. 8 (Sufflern-Nyack Pt 1); Oaklane; Hemion Rd.; Airmont Rd.; Sufflern-Mt. Ivey, S.H. 1448, 2.86 mi. Thy., 0.58 mi. Acc. H.T. 53-4. S.T. 53-22. R.C. 53-46. Rockland Co.; LB $9,678,349. est. $10,674,000, New York State Thruway-Mohawk Sect.-Sub. 10B (East Schuyler-Fort Herkimer); Herkimer Interchange; 6 Secondary Crossroads; Mohawk-Jacksonburg-Little Falls, S.H. 8401; Herkimer Village, East Albany St. S.H. 5060. 6.98 mi. Thy. 3.85 mi. Acc., M.T. 53-10, S.T. 53-23. R.C. 53-47, Herkimer Co.;
The John Irwin Contg. Co. Inc., Lockport N. Y., LB $222,833. est. $334,000. Olcott-County Line, S.H. 1052, 12.55 mi., FARC 53-52, Niagara Co.;
Luck Bros. Constr. Co., Plattsburg, N. Y., LB $119,433. est. $156,000. Mooers Village, S.H. 930, Mooers Forks-Champlain, Pt. 1, S.H. 5102, Battleman Rd., S.H. 1008, FARC 53-51, Clinton Co.;
D. A. Collins, Mechanicville, N. Y., LB $249,695. est. $250,000. Wilmington-Black Brook, Co. Rd. 12, 1.13 mi. FASS 53-5. Essex Co.; Bids June 11. CD 5/20.
▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York 17, N. Y., LB $1,177,000, Hangar No. 7 superstructure, Contr. NYA-290.004, New York International Airport, IDLEWILD, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids June 9. CD 5/21.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Fla., Fort Myers—B.A. 7/20—City, City Hall ww imprvs. $475,000. Plans deposit $60. Black & Assocs., 700 S.E. 3 St., Gainesville, Fla. Extended date. (Correction—location and owner) CD 4/22.
Ga., Gainesville—B.A. 8/5—City, water filtration plant, $763,000. Robert & Co. Assocs., 96 Poplar St. N.W., Atlanta, Ga., engrs. CD 2/27/52.

BIDS ASKED—BUILDINGS

W. Va., Huntington—STUDENT UNION—B.A. 7/8—State Bd. Educ., Capitol Bldg., Charleston, enlarge, modernize, incl. new heating, plumbing and electrical sys. for Shawkey Student Union Bldg., Marshall College. $500,000. Plans deposit $35. Lewis E. Stettler, 926 Sixth Ave., archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Westinghouse Electric Corp.**, 915 W. 21 St., Norfolk, Va., CA $1,150,260, compressor drive for 19-ft transonic pressure tunnel, LANGLEY FIELD, VA. National Advisory Committee for Aeronautics, Langley Field, Va., Bids Feb. 17. CD 2/25 under LB.
† **S. T. Stonecypher**, 1200 N. Fairwater Dr., Norfolk, Va., LB $377,673, water supply line and reservoir, storage tanks, Naval Amphibious Base, NOY 78213. LITTLE CREEK, VA. P. Wks. Office, Fifth Naval Dist., U.S. Naval Base, Norfolk, Va., Knappen-Tippetts-Abbett Engrg. Co., 62 W. 47 St., New York, N. Y. engr. Bids June 9. CD 5/22.
† **W. W. Cobb**, Rte. 3, Box 419, Suffolk, Va., LB $119,268, sewage collection sys. and lift station, Naval Amphibious Base, NOy 78217. LITTLE CREEK, VA. P. Wks. Office Fifth Naval Dist., U. S. Naval Base, Norfolk, VA. Bids June 9. CD 5/22.
WEST VIRGINIA—State Road Comm., 1800 Washington St. E., Charleston,
Boso & Ritchie, Inc., Ravenswood, W. Va., LB $173,061. five continuous steel I-beam spans, 61 ft., 70 ft., 90 ct., 51 ft. on concrete substructure, Ravenswood Bridge No. 1911 (W. Va. 2), FAP F-306 (9), Jackson Co. Bids June 9. CD 6/3.
WEST VIRGINIA State Road Comm., 1800 Washington St. E., Charleston,
Feather Constr. Corp., P.O. Box 881, Morgantown, W. Va. CA. $112,923. surf. tr. 20.3 mi. Spencer Clay County Line Rd., W. Va. 36. State Proj. 3416 and 3432, Roane Co. Bids June 9, awarded June 10. CD 6/3.
S. J. Curry & Co., Albany, Ga., LB $371,117, R. M. Clayton and South River Sewage Treatment Plants addns., ATLANTA, GA. City, City Hall, Atlanta, Ga. Bids June 8.
J. B. McCrary Co., Atlanta Federal Savings Bldg., Atlanta, Ga., CA, $268,479, WW imprvs. OZARK, ALA. City, City Hall, Ozark, Ala. Bids June 8. CD 5/21.
Carter Constr. Co., Geneva, Ala., CA, $416,533, santiary sewerage imprvs. OZARK, ALA. City, City Hall Ozark, Ala. Bids June 8. CD 5/21.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.
BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.
Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

BUILDINGS

LOW BIDS AND CONTRACTS

Consolidated Constr. Co., Eastern Park, Norfolk, Va., Owner Builds. $500,000. 100 RESIDENCES, NORFOLK, VA.
Pressley Constr. Co., Toccoa, Ga., CA, $307,385, 40 HOUSING units, CLARKSVILLE, GA. Clarksville Housing Auth., Clarksville, Ga. Bids June 9. CD 5/6.
W. E. Strang, 623 Drew St., Clearwater, Fla., CA, $500,000, dial-toll OFFICE, CLEARWATER, FLA. Peninsular Telephone Co., 828 Arlington Ave. N., St. Petersburg, Fla.
Weymer & Martin, 543 N. Atlantic Blvd. Fort Lauderdale, Fla., CA, $300,000, APARTMENT bldg., FORT LAUDERDALE, FLA. Gold Coast Apartments Inc., c/o contractor.
Bethune Apartments, 376 N. W. 25 St., Miami, Fla. Owner Builds, $350,000, 6 APARTMENTS, MIAMI, FLA.
Foster & Creighton Co., American National Bank, Nashville, Tenn., LB $1,296,800, Negro Industrial HIGH SCHOOL, TUSCALOOSA, ALA. City, City Hall, Tuscaloosa, Ala. Bids June 9. CD 5/19.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ill., Springfield—TRAFFIC CONTROL SYSTEM—B.A. 6/30—City, City Hall, furnishing, installing traffic control sys. in downtown area, $160,000.
Ill., Granite City—DRIVE IN THEATER—B.A. 7/15—St. Louis Amusement Co., Edward B. Arthur, pres., Fox Theatre Bldg., 527 N. Grand Blvd., St. Louis 3, Mo., 1,000-car drive in motion picture theatre, State Rte. 111 at Junction with U.S. 66, north of here. $200,000.

BIDS ASKED—BUILDINGS

▲ **Ind., Indianapolis**—ADMINISTRATION—Bids Asked Bd. Trustees, Marion College, Cold Spring Rd., admin. bldg., auditorium, Bishop Chartrand Memorial Chapel and science bldg. of red brick, trimmed with Bedford stone. $1,500,000. D. A. Bohlen & Son, State Life Bldg., archts. CD 2/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus,
A. Bentley & Sons Co., 201 Belmont Ave., Toledo, O., CA $1,403,610, est. $1,290,600, 1.157 mi., 2-grade, approach piers and abutments; 2-A grading, S.R. 120-3.46, A-UI-1052 (3), A UI-1052 (4), Parts Nos. 2 and 2A, City of Toledo, Lucas Co. Bids June 2. CD 6/11, under LB.
OHIO—State Hy. Dpt., Columbus,
rejected bids June 2, 1.629 mi. Type T-35, USR 68-5.82; SR 70-(17.59-18.54), City of Springfield, Clark Co. LB $114,897. Bids June 2. CD 6/11, under LB.
▲ **OHIO**—State Hy. Dpt., Columbus,
Hollinger-Davidson Co., 640 Miami St., Akron, O. CA $2,789,440, est. $3,036,400, 2.339 mi., Type T-35 on B-70 and structures, SR 5-10.95, A-U-687 (10), (Part No. 5), Akron Expressway System, City of Akron, Summit Co.;
Henry Miller, Box 54, Suffield, O., CA $1,989,547, est. $2,093,850, 7.286 mi. Type T-35 on B 20 and structures, SR 8-(20.31-27.98), F-19 (7), Villages of Boston Heights and Northfield, Summit Co. Bids June 2. CD 6/11, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Frank Messer & Sons, Inc.**, 4612 Paddock Rd., Cincinnati, O., LB $2,368,500. est. $2,960,000. 296 two story basmtless frame HOUSING, Proj. B, Beekman St. CINCINNATI, O. Cincinnati Metropolitan Housing Auth., Armory Ave., Cincinnati, O. Bids June 9. CD 5/21.
▲ **General Constr. Co.**, 416 Franklin St., Michigan City, Ind., Owner Builds. $1,250,000. 50 HOMES, MICHIGAN CITY, IND. Eugene M. Peck, 416 Franklin St., Michigan City, Ind., archt. Awarded May 28.
▲ **City Wide Builders**, 5400 Elston St., Chicago, Ill. CA. $1,000,000. 110,000 sq. ft. FACTORY, forge plant, linemens handtools mfg. SKOKIE, ILL. Mathias Klein Co., 3200 W. Belmont St., Chicago, Ill. Bids May 27. CD 5/11.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

KANSAS—B.A. 6/30—State Hy. Comm., Topeka,
Brown Co.—concrete culverts, wash checks, subgrade modification, light type surf. 7.441 mi. beginning at jct. with US 36 approx. 8½ mi. east of Hiawatha north and east on county hy., Proj. 7 S 1108 (1).

Mo., St. Louis—COMFORT STATION—B.A. 7/7—City, c/o Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, 12 comfort stations, various public parks, and playgrounds, $120,000. Walter Crecellius, ch. engr. and Albert Osburg, archt., 301 City Hall, 12 and Market Sts., Zone 2. CD 2/20/52.

▲ **Tex., Port Arthur**—B.A. 7/7—Sabine Lake Bridge & Causeway Auth., 1746 Wroxton St., Port Arthur, Sabine Lake Bridge and Causeway approach spans and pier, incl. 311,000 lbs. steel, 664,000 lbs. structural steel, 204 ft. swing span, 255,000 yds. hydraulic fill, etc. $1,000,000. Plans deposit $15. M. D. Gates, 1745 Seventh St., engr. CD 2/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Ulland Bros., Austin, Minn. CA **$189,196.** grading, grav. base, road-mixed bit. base, road-mixed bit. surf. 3.1 mi. between Ely Lake Rd. and SAR 20; grav. base, road-mixed bit. base, road-mixed bit. surf. 6. mi. between 4.5 mi. North of Zim and 1.5 mi. S. of Zim; grav. base, road-mixed bit. base road-mixed bit. surf. 4.7 mi. between 4.75 mi. SE of Markham and Markham; grav. base, road-mixed bit. base, road-mixed bit. surf. 2.2 mi. between SAR 13 at Adolph and 2.2 mi. W. of Adolph; grav. base, road-mixed bit. base, road-mixed big. surf. 7.1 mi. between 5 mi. N of Buhl and 12.1 mi. N. of Buhl, DULUTH, MINN. St. Louis Co., W. H. Borgen, aud., Duluth, Minn. Bids May 25. **CD 5/8.**

Kissick & Son Constr. Co., Hickman Mills, Mo. LB **$84,800.** sealing 25 mi. streets with liquid asph. and Joplin Chat;

American Paving Co., 8600 Wayne St., Kansas City, Mo. CA **$160,000.** resurf. sealing of boulevards. KANSAS CITY, MO. Park Rd., c/o J. V. Lewis, supt., Kansas City, Mo. Holland Wheeler, park bd. engr. CD 8/12/52.

City, Beaumont, Tex., Own Forces. **$200,000,** addnl. street rehabilitation work in downtown area; Purchase and Hire. **$75,000,** street conc. curbs and gutters, residential areas, BEAUMONT, TEX. George Schaumburg, 2678 Laurel St., Beaumont, Tex. engr. CD 9/7/50.

Austin Paving Co., 1000 Singleton Blvd., Dallas, Tex. CA **$101,474,** asph. type street paving, Day, Donna Dr., Daytona and Glover Pass;

Texas Bitulithic Co., 111 Commerce St., Dallas, Tex. CA. **$168,642,** paving and imprvs., Forney Rd., from Haskell and Dolphin to Parkdale Dr., DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Awarded June 8. CD 5/8/52.

W. D. Masterson Co., Henrietta, Tex., CA. **$119,000,** sanitary sewer sys. rehabilitation work, MIDLAND, TEX. City, Midaind, Tex., Joe E. Ward, 545 Nacol Bldg., Wichita Falls, Tex. engr. Bids May 28.

City, Port Arthur, Tex., Own Forces. **$250,000.** 15 in. concrete type storm sewers, PORT ARTHUR, TEX. Smith & Horton, Harris Blvd., Port Arthur, Tex., engrs. CD 12/12/50.

† **E. G. Perry & Son and Union Credit**, Townsend, Mont. LB **$142,025.** 3.6 mi. closed drains, 9.2 mi. open drains, structures, Buffalo Rapids Proj. Spec. 605C-21, MONTANA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids May 28. CD 5/20.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver;

Peter Kiewit Sons Co.; 1950 S. University St., Denver, Colo. CA **$189,266.** est. $180,283. stabilization plant mixed asph. surf. 5.31 mi., Proj. C 55-0019-03, San Juan Co. Bids June 4. CD 6/1.

BUILDINGS

LOW BIDS AND CONTRACTS

Geo. L. Cousins Contg. Co., 875 N. Skinker Blvd., St. Louis 5, Mo. CA **$309,790.** 1 story, 59x199 ft., brick, concrete, steel elementary SCHOOL, South of U. S. 66, 2 story, high SCHOOL addn., 1 story, bsmnt., 49x67 ft. SHOP, EUREKA, MO. School Dist., R-6, Bd. Educ., Morgan Selvidge, Supt. Schools, c/o High School Bldg., U. S. 66, Eureka, Mo. Bonsack & Pearce, Inc., 308 N. 6 St., St. Louis, 1, Mo., archts. Bids June 2. CD 3/13.

† **George L. Cousins Contg. Co.**, 875 N. Skinker Blvd., St. Louis 5, Mo. CA **$861,586.** WAREHOUSE 2 elevators, heating and sprinkler sys., railroad facilities, utilities, rehabilitate propane facility, lighting fence, pump house, St. Louis Ordnance Plant, 4300 Goodfellow Blvd., ST. LOUIS, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Mar. 12, awarded June 5. CD 4/3 under LB.

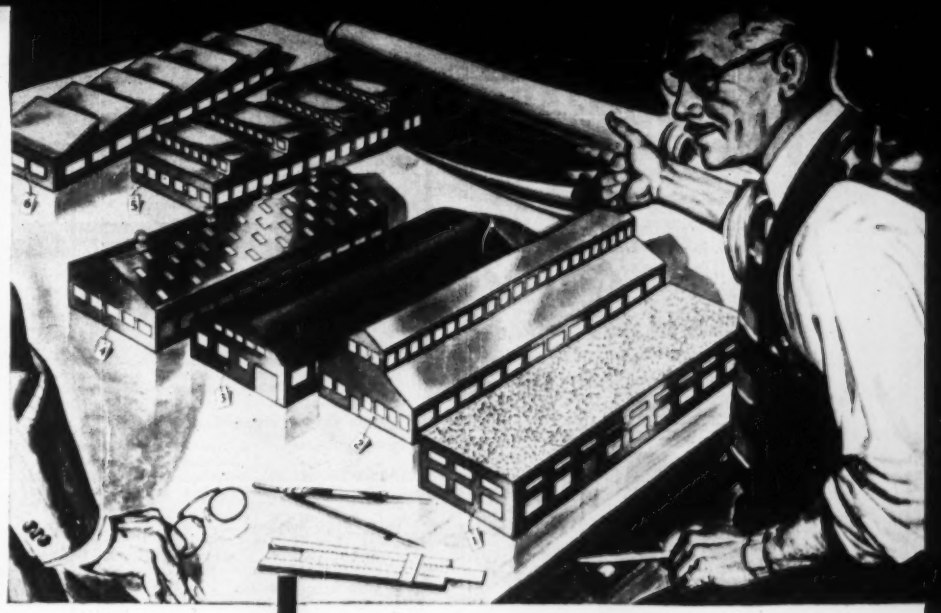
J. E. Williams Constr. Co., 6490 Page Ave., St. Louis 14, Mo. CA **$131,967.** 1 story, brick, steel, 80x160 ft., concrete WAREHOUSE, 1 story, 88x40 ft. OFFICE Chouteau Ave. east of Grand Blvd., ST. LOUIS, MO. Berry Tractor & Equipment Co., Inc., 4121 Forest Park Ave., St. Louis 8, Mo. Bids June 3. CD 6/4.

▲ **Grinnell Housing Corp.**, and **Wells & Son Constr. Co.**, Cotton Exchange Bldg., Dallas, Tex., CA. **$5,225,560.** construct, manage, finance, 490-family HOUSING units for Rapid City Air Force Base occupancy, RAPID CITY, S. D. U. S. Eng., for Air Force, 1st. and Douglas Sts., N.W. Wash. 25, D. C. CD 2/10 under LB.

Frank W. Bliss, 419 W. 7th St., Fort Worth, Tex. Own Forces. **$310,000.** 42 DWELLINGS, FORT WORTH, TEX. CD 4/23.

Mischer-Harris Co. Inc., 6925 Navigation Blvd., Houston, Tex., CA. **$367,785.** (A) 48 DWELLINGS; CA. **$439,500** (B) 60 dwellings, HOUSTON, TEX. Chris Hubert, Walter Mischer & Assoc., 6925 Navigation Blvd. Houston, Tex. CD 12/30.

B. L. McGee, Box 782, Austin, Tex., LB **$358,000.** est. $503,280, 1 story SCHOOL, SAN MARCOS, TEX.



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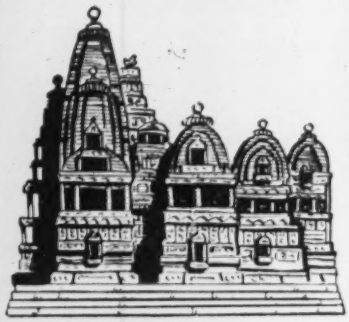

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San Marcos Independent School Dist., San Marcos, Tex. Bids June 9. CD 5/6.

Holmgren & Larson Constr. Co., 330 W. Costilla St., Colorado Springs, Colo. CA $314,700. general contract, 1 and 2 story, 100x102 ft., South and West Junior High SCHOOLS, COLORADO SPRINGS, COLO. School Dist. No. 11, Colorado Springs, Colo. Grant A. Wilson, 333 Independence Bldg., Colorado Springs, Colo., engr.-archt. Awarded June 2.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Calif., Miramar—FUEL HANDLING FACILITIES B.A. 7/10—Dpt. Navy, San Diego, contaminated fuel handling facilities and office, Miramar Naval Air Station, NOY 76830, Spec. 37481, $150,000. Plans deposit $15. CD 1/8/51.

Calif., Pasadena—B.A. 7/15—Sunny Slope Water Co., 1040 El Camp Dr., 6 m.g. reservoir underground tank, $100,000. CD 2/4.

SOON LETS CONTRACT—BUILDINGS

Calif., Culver City—WAREHOUSE—Klein-Norton, 1707 S. Los Angeles St., Los Angeles, soon lets contract, rein.-con. 22,000 sq. ft. warehouse, $200,000, Jones & Emmons, 8925 Beverly Blvd., Los Angeles, archts. CD 5/25.

Calif., North Hollywood—WAREHOUSE—J. J. Newberry, 314 W. 6 St., Los Angeles, soon lets contract, concrete 120,000 sq. ft. warehouse, $500,000, Lopatin & Patterson, 672 Lafayette Park Pl., Los Angeles, archts. CD 6/4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Morrison-Knudsen Co. Inc., Ford J. Twaits Co., 449 S. Beaudry St., Los Angeles, Calif., CA $9,126,334, Ordnance storage area, Nellis Air Force Base. ENG 04-353-53-90, LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Bids Mar. 18, awarded June 2. CD 3/27 under LB.

C. Hohner, 6203 E. Sharpe St., Spokane, Wash., LB $137,600, est. $266,820, sloping, gravel blanketing and placing rock protection along railway embankment, I nv. 53-99, Franklin and Benton Counties, WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 9. CD 5/13.

▲ CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Piombo Constr. Co., 1571 Turk St., San Francisco, Calif. CA, $3,749,133, grading, surf. 5 mi. addnl. 52 ft. roadbed 20 ft. to east of existing hy. to provide 6-lane freeway, Bayshore Freeway, Cities of San Mateo, Belmont and San Carlos, San Mateo Co. CD 6/3 under LB.

Norman I. Fadel, 7101 Radfort St., North Hollywood, Calif. LB $111,819. Paradise Canyon channel, LOS ANGELES, CALIF. Los Angeles Co. Flood Control Dist. 2250, Alcazar St., Los Angeles, Calif. Bids June 2. CD 5/14.

† Lindgren & Swinerton, 605 W. Olympic Blvd., Los Angeles, Calif. CA $939,993. conversion of 8 cells Bldg. 732 for turbo jet engine testing at Norton Air Force Base, Eng. 04-173-53-135, SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids May 27. CD 11/13/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Strand & Sons, 3941 University Way, Seattle 5, Wash. CA. $1,273,855. est. $1,750,000. 5 story 44x184 ft. and 4-story 50x82 ft. rein.-con. HOSPITAL, SEATTLE, WASH. Ballard General Hospital, 2208 Market St., Seattle, Wash. Bids May 14. CD 5/19 under LB.

Smith Phillips Co., Board of Trade Bldg., Portland, Ore. LB, $694,997. DORMITORY-AUDITORIUM bldg. at State School for the Deaf, VANCOUVER, WASH. State

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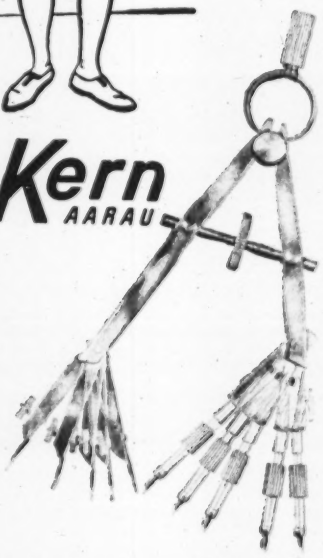

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Dpt. P. Institutions, Olympia, Wash. Bids June 9. CD 5/12.

Harry F. Smith, Box 37, Bakersfield, Calif. CA **$442,114.** 46 frame, stucco DWELLINGS, On Berger St., BAKERSFIELD, CALIF. Ralph L. Smith Jr., Box 37, Bakersfield, Calif.

L. C. Anderson Co., 3040 Hancock St., San Diego, Calif. CA $607,000. Dool Elementary SCHOOL addn., CALEXICO, CALIF. Calexico School Dist., 438 Sherman St., Calexico, Calif. CD 5/19 under LB.

† **Viking Co.,** Box 8, Covina, Calif. LB **$392,595.** est. $300,000. rehabilitate various B.O.Q. and POST OFFICE at Marine Barracks NOY 75750, Spec. 37401, CAMP PENDLETON, CALIF. Dpt. Navy, San Diego, Calif. Bids June 2. CD 5/14.

William O. Gray, 10911 S. Atlantic Blvd., Lynwood, Calif. LB **$399,750.** frame, stucco, Morningside SCHOOL, MANHATTAN BEACH, CALIF. Manhattan Beach School Dist., Manhattan Beach, Calif. David Mann, Johnson & Mendenhall, 4201 Sunset Blvd., Los Angeles, Calif., archts. Bids May 5.

Trepte Constr. Co., 2001 Kettner Blvd., San Diego, Calif. CA **$425,000.** 300x400 ft. masonry WAREHOUSE, Orange Empire Stores, NATIONAL CITY, CALIF. Alfred M. Lewis Inc., 2191 Main St., San Diego, Calif.

Paul L. Burkhard, 610 S. Glendale Ave., Glendale, Calif. Owner Builds. **$302,400.** 42 stucco DWELLINGS Ave. Q-6, Sweetbrier St., PALMDALE, CALIF. Paul Burkhard Jr., 610 S. Glendale Ave., Glendale, Calif., archt.

▲† Dpt. Navy, San Diego, Calif. rejected bids Mar. 19 addnl. training facilities (second increment). Naval Training Center, NOY 74058, Spec. 35093, SAN DIEGO, CALIF. LB **$2,114,000.** CD 3/26 under LB.

CANADA

BIDS ASKED—BUILDINGS

B. C., Vancouver—CUSTOMS—B.A. 7/15—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., customs building $500,000. Plans deposit $300. E. A. Gardner, c/o owner, archt.

SOON LETS CONTRACT—BUILDINGS

N. S., Halifax—OFFICE—Imperial Oil Ltd., King and Church Sts., Toronto, Ont., soon lets contract, 4 story, bsmnt., 74x115 ft., rein.-con., brick office at Barrington and South Sts., $500,000. Davison, Duffus, Romans & Davis, 95 Dresden Row, archts. Ross, Patterson, Townsend & Fish, Dominion Square Bldg., Montreal, archts. CD 6/5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Adams, Berg & Griffiths Contractors, Ltd., Box 3, Creston, B. C. CA **$69,300,** enlarge canals, 2 mi. new canal in Bow River development proj. north of Arrowwood;

Wheilihan Constr. Co. Ltd., Box 99, Lethbridge, Alta. CA **$101,263.** 8 mi. northwest of Arrowwood, new irrigation canal, drainage inlet structures on Bow River Development Proj., Arrowwood. ALBERTA. Prairie Farm Rehabilitation Admin., McCallum-Hill Bldg., Regina, Sask. Bids Apr. 24. CD 4/20.

Marwell Constr. Co. Ltd., 1500 W. Georgia St., Vancouver, B. C., CA, **$354,762,** hangar aprons, etc. EDMONTON, ALTA. Govt. of Canada, Dpt. National Defence, AIR, Ottawa, Ont. Defence Constr. Ltd. 56 Lyon St., Ottawa, Ont., engr. CD 3/3/48.

Caldwell Constr. Co. Ltd., 123 York St., Fredericton, N. B. CA **$200,000.** storage dam on power development at Tobique Narrows near Perth, NEW BRUNSWICK, New Brunswick Electric Power Comn., St. John, N. B. Dr. T. Hogg, Pinewood Ave., York Mills, Toronto, Ont., engr., Power Corp. of Canada Ltd., 355 St. James St. W., Montreal, Que., engrs. Awarded May 25.

Diamond Constr. Co. Ltd., 60 Carleton St., Fredericton, N. B. CA **$141,345,** street paving, FREDERICTON, N. B. City, City Hall, Fredericton, N. B. Awarded June 3. CD 8/16/46.

Modern Constr. Ltd., Moncton, N. B. CA, **$155,715** wharf at Cape Bimet, ST. JOHN, N. B. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. R. Blais, c/o owner, engr. CD 2/20.

Sterling Constr. Co., 2994 Sandwich St. E., Windsor, Ont. CA **$236,815.** apsh. surf. on county roads, CHATHAM, ONT. Kent Co., County Municipal Bldg., Chatham, Ont. Awarded June 8. CD 5/8.

Keillor Constr. Co. Ltd., 169 Woodworth Ave., St. Thomas, Ont., CA, **$120,417,** installing water supply system ST. THOMAS, ONT. Govt. of Canada, Dpt. National Defence, Ottawa, Ont. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont., engr.

F. E. Shaw Ltd., 530 Vidal St., Sarnia, Ont. CA est. $300,000. 7 mi. pipe line shore to tank farm, SARNIA, ONT. Interprovincial Pipe Line Ltd., 50 W. King St., Toronto, Ont.

Keystone Contractors Ltd., Windsor, Ont. CA **$221,626.** paving Sandwich St. east, WINDSOR, ONT. Municipality, Windsor, Ont. CD 3/25.

Iddon E. Corneil Inc., 4654 W. Ste. Catherine St., Montreal, Que., CA, **$300,000,** 3 story 50x200 ft., concrete, structural steel, brick, hangar annex MONTREAL, QUE. T.C.A. 660 W. Ste. Catherine W., Montreal, Que. Bids Mar. 16.

Union des Quarries & Paving Ltd., 196 Second Ave., Quebec City, Que. CA **$200,000.** street paving 120 streets, QUEBEC CITY, QUE. Municipality, Quebec City, Que. CD 4/17.

Edgar Jourdain, Capchat, Que. CA **$139,900.** wharf addn., STE MARTHE, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids June 3. CD 5/13.

▲ **SASKATCHEWAN**—Province of Saskatchewan, Regina,

Floyd Barber Ltd., Lloyd Bldg., Regina, Sask. CA **$628,000.** grav. base course, plant hot bit. grav. surf. course Whitewood to Oakshela, Whitewood;

M. W. Forsyth, Neepawa, Sask. CA **$470,000.** sub-grade Truffnell to Foam Lake, Truffnell;

Henderson Brothers & Co., Vanguard, Sask. CA **$130,000.** sub-grade Bresayear to Birling. Grand total $1,228,000.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bradford-Hoshall Ltd.,** 108 Cavan St., Port Hope, Ont. CA. est. **$1,000,000.** partly 1 and 2 story steel, brick FACTORY 142,000 sq. ft. with 40x40 ft. bay, rein.-con. fdn., PORT HOPE, ONT. Nicholson File Mfg. Co. Ltd., Port Hope, Ont. Bids May 27, awarded June 9. CD 5/18.

R. Timms Constr. & Engineering Ltd., 221 Burgar St., Welland, Ont. CA. est. **$350,000.** 1 story, 58x264 ft. Huston Public SCHOOL, SOUTHAMPTON, ONT. Pub. School Bd., Southampton, Ont. Bids June 1. CD 5/15.

Finley W. McLachlan Ltd., 195 Fairbank Ave., Toronto, Ont., CA. **$250,000.** 1 story, bsmnt., packing PLANT Ryding Ave., TORONTO, ONT. Dominion Dressed Meats Civic Abattoir, Toronto, Ont. CD 4/9.

Max Sharp & Son, 11 Manitou Blvd., Toronto, Ont., CA. $500,000 29-suite APARTMENT BLOCK, 1584 Bathurst St., TORONTO, ONT. Murray B. Koffler, 1584 Bathurst St., Toronto, Ont. H. B. Kohl, 29 Colborne St., Toronto, Ont., archt.

Dunker Constr. Co. Ltd., 251 King St. W., Kitchener, Ont. CA. **$300,000,** 12-bed HOSPITAL addns., alterations, WALKERTON, ONT. Bruce Co., Walkerton, Ont. Govan, Ferguson & Assocs., 515 Jarvis St., Toronto, Ont., archts. CD 1/30.

▲ **Foundation Co. of Canada Ltd.,** 1900 Sherbrooke St. W., Montreal, Que., LB. **$2,450,000.** superstructure for 8 story, 116x218 ft., steel frame department STORE, MONTREAL, QUE. Robert Simpson Montreal Ltd., 977 St. Catherine St. W., Montreal, Que. Bids May 21. CD 5/7.

Parkdale Homes Development, 630 W. Dorchester St., Montreal, Que. Owner Builds. est. **$360,000.** 3 story, 90x42 ft., concrete, brick APARTMENTS, MONTREAL, QUE. G. Jarry, 7275 Querbes Ave., Qutremont, Que., archt.

Main Constr. Co. Reg'd., 4535 City Hall Ave., Montreal, Que. CA. est. **$300,000.** 177x218 ft., concrete, steel, brick fluorescent lighting equip. FACTORY, MONTREAL, QUE. Rest Glow Mfg. Co. Ltd., 6845 S. Urbain St., Montreal, Que. CD 5/11.

City Constr. Ltd., 275 St. Zotique St., Montreal, Que. CA. **$330,000,** concrete, brick, SCHOOL, Blvd. St. Rose, STE. ROSE, QUE. School Comn. St. Rose, Que. Lalonde & Valois, Canada Cement Bldg., Montreal, engrs. Gascon & Parent, 934 E. Ste. Catherine St., Montreal, archts.

Laflamine & Demontigny, 118 Radison St., Three Rivers, Que. Owner Builds. est. **$150,000.** 1 story, 100x200 ft., concrete, brick FACTORY Royal St., THREE RIVERS, QUE.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **ALASKA**—Alaska Road Comn., Dpt. Interior, Juneau,

L. W. Martin, Fairbanks, Alaska, LB **$106,566.** Moose and Jarvis Creek bridges, Richardson Hy. Bids June 9. CD 5/25.

† **S. S. Mullen, Inc.,** 621 9th Ave. N., Seattle, Wash., LB **$671,435.** est. $605,009, 1 story 107x325 ft. rein.-con., masonry aircraft maint. shop, ENG 95-507-53-76. Eielson Air Force Base. ALASKA. U. S. Eng., 3013 Arcade Bldg., Seattle 1, Wash. Bids June 9. CD 5/28.

Proposed Projects——

WATER SUPPLY

▲ **Fla., Daytona Beach**—City, WW imprvs. **$1,640,000.** Russell & Axon, Municipal Airport, consult. engrs.

Fla., Punta Gorda—City, City Hall, water supply imprvs. and treatment plant, **$300,000.** Russell & Axon Municipal Airport, Daytona Beach, Fla., consult. engrs.

▲ **Tex., Houston**—City, City Hall, 900 Brazos St., completion of San Jacinto Water Supply Dam Proj. **$8,750,000;** removal several railway tracts acct. San Jacinto Dam Water Retention Proj. **$1,150,000.** Freese, Nichols & Turner, 2111 C & I Bldg., consult. engrs.

▲ **Tex., San Angelo**—City, City Hall cancelled bond election to have been held June 6 due to cyclone, 80,000 acre ft. dam for Domestic Water Supply, probably at Lake Nasworthy site. **$5,000,000.** CD 5/26.

SEWERS, WASTE DISPOSAL

Conn., Stratford—Town, Town Council, Office Town Mgr., Town Hall, 7,800 ft. trunk line sewer, Warwick Ave. to Birdseye St. **$400,000.** Bowe, Albertson & Assoc., 110 William St., New York 38, N. Y. consult. engrs. (Correciton-engrs. name). CD 5/20.

▲ **Fla., Coral Gables**—City, City Hall, sanitary sewer sys. $3,000,000. M. B. Garris, 622 S.W. 27 St., Miami, consult. engr. CD 5/12.

Fla., Daytona Beach—City, City Hall sanitary sewerage imprvs., **$432,000.** Russell & Axon Municipal Airport, Daytona Beach, consult. engrs.

Ga., Americus—City, two sewage disposal plants, $647,000. Wiedeman & Singleton, P. O. Box 1878, Atlanta, Ga., consult. engrs.

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▲ **Ind., Indianapolis**—Bd. Sanitary Comrs., Clarence T. Drayer, chmn., City Hall, Zone 4, interceptor sewer and Southern Ave. relief sewer, "Belmont Interceptor". $4,000,000. Russell B. Moore Assoc., 810 N. New Jersey St., Zone 4, consult. engrs.

Me., Pittsfield—Town, Bd. Selectmen, Town Hall, sewer sys., $600,000, Whitman & Howard, 89 Broad St., Boston, Mass., consult. engrs.

O., Youngstown—City, City Hall, plans by Pace Associates, 53 W. Jackson Blvd., Chicago, Ill., incinerator, $475,000. James C. Ryan, city engr. CD 5/4.

BRIDGES

▲ **LOUISIANA**—Mississippi River Bridge Auth., State Hy. Dpt., Baton Rouge, 3,000 lin. ft. high level, fixed hy. bridge on 4 concrete piers over Mississippi River from Erato St. Wharf, New Orleans to Lamarque St., Algiers. $57,000,000.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Brookline and Newton—overpass Hammond St.-Worcester Turnpike, $1,300,000. CD 12/16/52.

STREETS AND ROADS

▲ **Ala., Mobile**—Mobile Co. Comrs., Court House bond election July 29, road imprvs. $4,273,000. Ewin Engr. Corp., P. O. Box 361, Mobile, Ala., consult. engrs. CD 1/20.

Mass., Worcester—City, Dpt. P. Wks., City Hall, roads, drainage, 8-10 mi. streets, appurtenances, various locations, $500,000, Whitman & Howard, 89 Broad St., Boston, consult. engrs.

▲ **Mo., St. Louis County**—St. Louis County, c/o Lumas F. Matthews, county suprv., Court House, Clayton, Zone 5, bond election Nov. 3, hys. and expressways, $31,432,000.

▲ **O., Youngstown**—City, City Hall,

1954-1955 Program

Canal St., replacement, by Boardman to South Ave. connection, $100,000.
Center St., widening from Wilson Ave. to Center Street Bridge and widen Wilson St. from Center St. to city limits, $60,000.
W. Federal St., realign from point north of Sarah St. to city limits, $150,000;
Glenwood Ave.—realign curve between Midlothian Blvd and Ferndale Ave., $50,000.
Hubbard Rd., relocate from Thorn Hill to Albert St., $110,000.
Mahoning Ave. widen at B. & O. overpass, west of Oak Hill Ave., $40,000.
Market St., widen east side from Warren to Glenwood Ave. and from Southern Blvd. to city limits, $400,000.
McGuffey Rd., extend from Wick to Madison Aves. $80,000.
Poland Ave.—relocation between Loveland Rd. and Powers Way, $90,000.
E. Rayen Ave.—realign and widen from Walnut St. to Oak St. Bridge, $500,000.
South Ave., widen from King St. to Cameron Ave., $800,000.

1956-1957 Program

W. Federal St., relocate from Robinwood Ave. to Jefferson St.;
Oak St., redesign at intersection of Early Rd., Landsdowne Blvd. and Shehy St.
Oak St., widen from Hine to Silbert Sts.
Prince Rd., open from Belle Vista to Schenley Ave.;
Tod Ave., open to Salt Spring Rd.;
South Ave., extend from Wood St. to Anders Ave.
First stage of West By-Pass Link from Federal St. to South Side.
Reconstruct South Ave. bridge over Gibson Run. $2,250,000;

1958-1959 Program

Canfield Rd., extend from Glenwood to Indianola Aves.;
Logan Ave., widen from Dennick to Hubbard Rd.;
W. Rayen Ave., widen and redesign from Belmont to Covington;

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Salt Spring Rd., widen and realign curves; South Ave., widen from Indianola to Midlothian

Second Stage of West By-Pass Link, from W. Federal St. to South Side, with bridge to West Side, $1,800,000. James C. Ryan, city engr.

Pa., Pittsburgh—City, Dpt. P. Wks., City Hall, Pittsburgh, grading, paving, curbing, sewers and walks, Negley Run Rd. from Washington Blvd. to Broad St., $500,000. CD 11/11/43.

Tex., Port Neches—City, Jas. A. Bowlin, Mayor, street imprvs., paving, $875,000.

AIRPORTS

Pa., Pittsburgh—AIRPORT—Bd. Comrs. Allegheny Co., County Office, rehabilitation of Allegheny County Municipal Airport, 2,000 ft. concrete runway, West Mifflin, $400,000.

▲† Tex., Sherman—SHOP, TEST CELL-U—U. S. Eng., Box 61, Tulsa 2, Okla., base maintenance shop, $750,000; jet engine test cell, Perrin Air Force Base, $4[illegible],000.

LATIN AMERICA

▲ Mexico, Matamoros—Republic of Mexico, Dpt. P. Wks. and Communications, Mexico City, road imprvs. on Matamoros-Ciudad Victoria-Renosa Hy. and some road extens. into new farming districts. $1,250,000; new road from Matamoros to Tampico, 260 mi. $3,460,000.

▲ Mexico, Reynosa—Mexican Fed. Govt., Dpt. P. Wks. & Communications, Mexico City, and City of Reynosa, drainage proj. $1,360,000.

PUBLIC BUILDINGS

Ark., Jonesboro—DORMITORY—Arkansas State College, Jonesboro, plans by Elmer A. Stuck & Assoc., 217 E. Washington Ave., Jonesboro, dormitory, $500,000. CD 6/2.

▲ Calif., Lafayette—SCHOOL—Lafayette Elementary School Dist., voted $1,400,000 bonds, schools.

Colo., Golden—SCHOOL—Jefferson Co. School Dist. No. R-1, plans by Ralph D. Peterson, 1707 Gilpin St., Denver, high school, $900,000. CD 10/23/52.

Del., Dover—SCHOOL—Dover Special School Dist., plans by Walter Carlson, 1014 Delaware Ave., Wilmington, elementary school, $750,000.

▲ Ga., Athens—HOSPITAL—Clarke Co., Athens, hospital addn. $1,500,000.

▲ Ga., Dalton—HOSPITAL—City and Whitfield Co., voted $450,000 bonds June 3, hospital, $1,250,000. CD 5/14.

▲ Ill., Tinley Park—HOSPITAL CONSTR.—State, State Capitol, Springfield, plans by Louis H. Gerding, c/o owner, addnl. constr. work, $1,390,000; addnl. new constr. $2,918,000 at Tinley Park State Hospital.

Ia., Weiser—SCHOOLS—School Dist. 431, Weiser, voted bonds, 2 grade school, $600,000. R. G. Thompson, Weiser, archt.

Me., Limestone—SCHOOL—Housing & Home Finance Agency, 42 Broadway, New York, N. Y., plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, Mass., 1 story, masonry, 4 wings elementary school, Limestone Air Force Base. $700,000. CD 4/21.

▲ Mass., Avon—SCHOOL—Town, H. Carrell Gilgan, supt. schools, Town Hall, plans by Edgar T. P. Walker & Theodore B. Hanna, 131 State St., Boston, consolidated school, $1,500,000.

▲ Mass., Norton—SCHOOL—Town, Elementary School Bldg. Comn., plans by Harold Knigh, 11 Beacon St., Boston, elementary school, $700,000 to $1,000,000, Fay-Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.

▲ Mass., Waltham—ADMISSIONS BLDG.—State, Dpt. Mental Health, 15 Ashburton Place, Boston, plans by Shepley-Bulfinch-Richardson & Abbott, 1 Court St., Boston, admissions bldg., Metropolitan State Hospital. $2,000,000. Thompson Engr. Co., 177 State St., Boston, elec. engrs.

▲ Minn., Northfield—SCHOOL—Bd. Educ., P. B. Hinds, chn., voted $1,600,000 bonds May 19, high school addn., $1,140,000; grade school addn., $376,000. Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts.

▲ Mo., St. Louis County—HEALTH AND WELFARE STRUCTURES—St. Louis County, c/o Luman F. Matthews, county supvr., Court House, bond election Nov. 3, health and welfare structures, $3,458,500; public bldgs., $3,000,000.

▲ N. J., Teaneck—SCHOOLS—Bd. Educ., Teaneck, plans by Emilio J. DiRienzo & Warren S. Holmes, 100 Stevens St., Mt. Vernon, N. Y., elementary school, $500,000; Junior High School, $1,800,000.

▲ N. Y., Brooklyn—HOUSES—New York City Housing Auth., 63 Park Row, New York, Zone 7, Coney Island Houses, on 6.91 acres bounded by Boardwalk, Surf Ave., W. 29 and W. 32 Sts., for 420 families, $6,485,000.

▲ N. C., Goldsboro—SCHOOL IMPRVS.—Wayne County Bd. Educ., Goldsboro, bond election July 7 school imprvs. $2,336,000. CD 3/6.

▲ N. C., Greenville—SCHOOL—Greenville City School Bd., Greenville, voted bonds, school imprvs., $1,250,000.

Okla., Miami—CIVIC CENTER—City, voted $500,000 bonds, civic center, $750,000. D. E. Stevens, Stillwater, Okla., archt. CD 5/4.

▲ Pa., Erie—SCHOOLS—School Dist. of Erie, Admin. Officers, Public Library, plans by Gifford & Sunda, 119 W. 8th St., 2 story Junior High School, Peach

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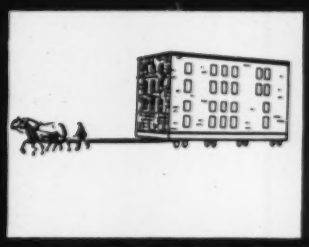

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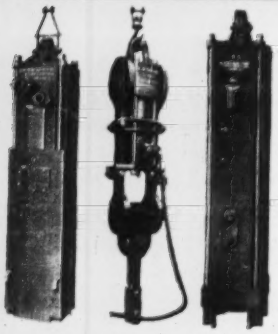

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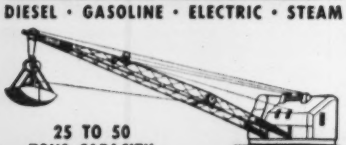

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and Cherry Sts., $1,500,000; 1 story Memorial Vocational School, $1,000,000; plans by Nelson Goldberg & Heidt, 1215 Baldwin Bldg., grade school, 36 St., $625,000.

Pa., Warren—HIGH SCHOOL—Warren Area Joint School Dist., Warren, plans by Lawrie & Green, 321 N. Front St., brick, block Beatty Junior High School addn. $750,000.

Tex., Daingerfield—HOSPITAL—City, E. R. Baber, chn. Bldg. Committee, 50-bed hospital. $500,000.

Tex., El Paso—JAIL, etc.—City, City Hall, plans by Davis & Foster, Mills Bldg., jail and police headquarters, $550,000.

Tex., Levelland—SCHOOL—Levelland Independent School Dist., plans by Atcheson & Atkinson, 204 Sanford Bldg., Lubbock, new elementary school and Junior High addn. $600,000.

Va., Princess Anne—SCHOOLS—Princess Anne County School Bd., Princess Anne, voted $950,000 bonds June 2, two elementary schools, Kempsville, $950,000. Frank W. Cox, c/o owner, Supt. of Schools, engr. CD 5/1.

▲ Wyo., Casper—HOSPITAL—Natrona County Hospital Assoc., Casper, bond election Aug. 4, hospital, $1,000,000, Fisher & Fisher, Denver Natl. Bldg., Denver, Colo., consult. engrs. and archts. CD 7/18/51.

Ont., Picton—HOSPITAL—Prince Edward County Hospital Bd., H. R. McDonald, chn., Bloomfield Rd., plans by Drever & Smith, 81 Brock St., Kingston, 50-bed steel, brick hospital. $612,000. CD 3/30/50.

▲ Que., Montreal—ADMINISTRATION BLDG.—Catholic School Comn., 117 W. Ste. Catherine St., plans by E. A. Doncet, 2245 E. Sherbrooke St., 6 story, 120x400 ft., 6 story, 6x100 ft. concrete, steel, masonry administration bldg., 1 story 50x400 ft. garage. $3,000,000. CD 1/4/52.

COMMERCIAL BUILDINGS

▲ Calif., Anaheim—DWELLINGS—Placentia Villa Corp., c/o H. W. Underhill, archt., 4313 Leimert Blvd., Los Angeles, 64 dwellings and shopping center, $1,000,000.

Calif., Palmdale—DWELLINGS—Gold Bond Homes, c/o H. W. Underhill, archt., 4313 Leimert Blvd., Los Angeles, 100 dwellings, $900,000.

▲ Calif., Reseda—SHOPPING CENTER—Shulman Bros., c/o H. W. Underhill, archt., 4313 Leimert Blvd., Los Angeles, 2 story, 150x600 ft. shopping center, $1,250,000.

▲ Calif., San Fernando—DWELLINGS—Malouf-Frantz Co., 1320 N. San Fernando Rd., Burbank, plans by Marvin H. Jones, 5154 Cahuenga Blvd., North Hollywood, 120 dwellings, $1,000,000.

▲ Mass., Northampton—HOSPITAL—Cooley Dickinson Hospital, 30 Locust St., plans by James H. Ritchie & Assoc., 135 Clarendon St., Boston, Hospital addn., Locust St., $1,500,000. CD 4/9/46.

▲ Mich., Lincoln Park—SHOPPING CENTER—Owner, c/o Weidmaier & Gay and Maxwell Wright, Commerce Toll, Detroit, masonry shopping center, 400,000 sq. ft. floor space for stores, 21 acre site, Port St., $6,500,000.

▲ Mo., Kansas City—APARTMENT—Harold S. Bradley Inc., 121 W. 63 St., Kansas City, Mo., plans by Harry L. Wagner, 15 W. 10 St., Kansas City, Mo., 12 story, apartment at Brookside-Wornall Rd. and Meyer Blvd., $1,400,000.

Mo., Kansas City—APARTMENT—Geo. C. Norton, 1016 Baltimore St., Kansas City, Mo., plans by J. F. Lauck, 6225 Brookside St., Kansas City, Mo., 2 apartments, Rochhill Rd. to Robt. Gillham Rd., $500,000.

▲ Mo., St. Louis—HOSPITAL—The Jewish Hospital of St. Louis, c/o Major B. Einstein, pres., Bd. Directors, 216 S. Kingshighway Blvd., Zone 10, 7 story, hospital for chronically ill on Parkview Pl., memorial to late Mark C. Steinberg, $1,000,000. CD 4/24.

▲ N. J., Elizabeth—APARTMENTS—Fairview Estate Apartments, c/o S. J. Kessler & Sons, archts., 118 E. 28 St., New York 16, N. Y., two 12-story apartments, 901-919 N. Broad St., and 918-938 Cross Ave. $3,000,000.

▲ N. J., Teaneck—HOSPITAL—Holy Name Hospital, 718 Teaneck Rd., 4-story hospital wing addn. at site. $2,500,000.

N. Y., Brooklyn—APARTMENT—Rayjer Realty Corp., 350 Lafayette St., Zone 5, plans by Oscar I. Silverstone, 153 Pierrepont St., Zone 2, 6 story apartment, 141 Lenox Rd. $525,000.

N. Y., Rego Park—APARTMENT—L. Tyman, c/o George Miller, archt., 19 W. 44 St., New York, Zone 36, 6 story apartment, Woodhaven Blvd., southeast corner Alderton Pl. $850,000.

N. C., Jacksonville—CHURCH—Trinity Methodist Church, Jacksonville, church, $300,000.

▲ O., Dayton—HOUSING—Wenzler Bros. Constr. Co., 530 Winding Way, Dayton, 400 brick homes, northwest corner of Stroop and Marshall Rds., Kettering Village. $7,500,000. (5-year program).

Okla., Lawton—STORE—Sears Roebuck Co., W. Arthington and S. Homan Sts., Chicago, Ill., plans by Paul Harris Lawton, retail store at 11 and Gore Sts. $600,000.

Tex., Austin—PARISH HOUSE, STUDENT CENTER—Diocese of Texas, and All Saints Parish, 502 E. 5 St., plans by Fehr & Granger, 502 E. 5 St., parish house and student center. $500,000.

▲ Tex., Dallas—OFFICE-ICT Group Home Office Bldg., c/o Ben Jack Cage, Mercantile Bldg., 4 story bsmnt., masonry office, Haskell & Expressway, $1,500,000.

▲ Tex., Galveston—HOTEL—Peter Douvry, 5302 Boulevard, plans by Andrew Fraser, 407u Trust Bldg., 6-story rein.-con. frame hotel, incl. 1 story dance hall, dining room with fishing pier in rear. $1,000,000. CD 9/15/47.

Tex., Houston—MOTEL—E. C. Carlson, 7716 Keller St., Houston and E. G. Bryan, Pasadena, plans by Victor Neuhaus, 2303 LaBranch St., motel, on Katy Rd. $500,000.

▲ Tex., Houston—PROFESSIONAL BLDG.—Memorial Professional Bldg., c/o Wirtz, Calhoun, Tungate & Jackson, archts., 500 Stuart St., 12-story bsmnt.; 200,000 sq. ft. masonry Memorial Professional Bldg., $3,000,000; 7-story auto parking garage, adjoining proposed Mem. Professional Bldg., $1,000,000.

▲ Utah, Provo—APARTMENTS, etc.—Brigham Young University, Provo, plans by Fred L. Markham, 45 North University St., Provo, Fetzer & Fetzer, 415 Zions Savings Bank Bldg., Salt Lake City, 21 apartments and dormitory bldgs. to house 960 women and 800 men (first unit), academic and service bldgs., $10,000,000.

Va., Roanoke—LIBRARY, DORMITORY—Hollins College, Hollins, Roanoke, plans by W. Pope Barney & Roy W. Banwell, 1400 S. Penn Square, Phila., Pa., library and dormitory, $650,000.

▲ W. Va., Charleston—OFFICE—Columbia Gas System, United Fuel Gas Co., 1033 Quarrier St., plans by Douglas Orr, 111 Whitney Ave., New Haven, Conn. and Martens & Sons, 1503 Virginia St. E., Charleston, 11-story office, on 18-acre tract, air-conditioning, $5,000,000. CD 11/7.

▲ Wis., Cudahy—SHOPPING CENTER—J. L. Callar, Inc., 4417 W. North Ave., Milwaukee Zone 8, plans by A. W. Gross, 4179 N. 15 St., Milwaukee Zone 9, 135,000 sq. ft. shopping center, $2,000,000.

Wis., Milwaukee—MEDICAL CENTER—Owner c/o Ellerbe & Co., archts., E. 505 First National Bank Bldg., St. Paul, Minn., 3 story, bsmnt., medical center, $750,000.

INDUSTRIAL BUILDINGS

Ky., Louisville—PLANT—Frank Fehr Brewing Co., 412 Ferh St., plans by Jos. H. Kolbrook, Starks Bldg., bottling plant addn., $500,000. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs.

Ky., Louisville—PLANT—Oertel Brewing Co., Inc., 1400 Story St., plans by Jas. H. Kolbrook, Starks Bldg., bottling plant addn., imprvs., $500,000. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs.

N. Y., Maspeth—STORAGE—Circle Wire & Cable Corp., 5500 Maspeth Ave., plans by Kahn & Jacobs, 2 Park Ave., New York Zone 16, 2-story 131x400 ft. storage bldg. Maspeth Ave. southeast corner Page Pl. $565,000. Farkas & Barrow, 150 Broadway, New York Zone 7, consult. engrs.

N. C., Charlotte—PLANT Standard Chemical Products, Inc., 1301 Jefferson St., Hoboken, N. J., plant, $750,000.

▲ O., Cincinnati—SHIPPING TERMINAL—Harry L. Olden, 1707 Eastern Ave., development of 22-acre tract into rail-truck-river shipping terminal on Eastern Ave. $2,000,000.

▲ O., Toledo—WAREHOUSE—Kroger Co., 135 Tecumseh St., warehouse and general office quarters, Hill Ave., and Toledo Terminal R. R. $2,0000,000.

▲ Okla., Ponca City—PLANT—Continental Oil Co., Ponca City, carbon black plant. $2,750,000. Robert J. Wishnick, c/o owner, engr.

Tex., Dallas—GARAGE—Sanger Bros., Main and Lamar Sts., 1000 auto parking garage, $750,000.

▲ Wash., Anacortes—REFINERY—Shell Oil Co., 1229 Westlake Ave. N., Seattle, oil refinery, $75,000,000. Site changed. CD 1/16 under Seattle.

▲ Alta., Okotoks—PLANT—Shell Oil Co. Ltd., 25 E. Adelaide St., Toronto, sulphur extraction plant, $1,000,000.

UNCLASSIFIED

▲ Fla., Tallahassee—ELECTRIC SYSTEM—City, City Hall, electric distr. sys. addns. $1,500,000. Robert & Co. Assoc., 96 Poplar St., N. W. Atlanta, Ga., consult. engrs.

Kentucky—RURAL DISTRIBUTION LINES—Nolin Rural Electric Co-operative, Corp., Elizabethtown, 245 mi. rural distr. lines, sys. imprvs., Hardin Co., $510,000.

▲ Mo., St. Louis County—PARKS—St. Louis County, c/o Luman F. Matthews, county suprv., Court House, bond election Nov. 3, county parks, $4,500,000.

▲ O., Maumee—STADIUM—Lucas Co., City of Maumee, Court House, Toledo, baseball and general purpose stadium on Key St., opposite Ft. Miami Fairgrounds, 55-acre tract. $1,000,000.

S. C., Orangeburg—GAS DISTRIBUTION SYSTEM—Town, Town Hall, natural gas distr. sys., $750,000. Ray R. Littrell & Assocs., Athens, Ga., consult. engrs. CD 3/13.

Texas—TELEPHONE LINES—Central Texas Telephone Cooperative, Inc., San Saba, 565 mi. rural pole telephone lines, San Saba Co. $550,000. Joe E. Ward, 1608 A Monroe St., Wichita Falls, consult. engr.

Va., Richmond—TELEVISION STATION—Richmond Television Corp., 1013 A East Main St., Richmond, television station, $700,000. Weldon & Carr, 1605 Connecticut Ave. N. W., Wash., 9, D. C., consult. engrs.

W. Va., Charleston—TELEVISION STATION—Kanawha Valley Broadcasting Co., (WGKV), 208 Dickinson St., television station, $600,000. George C. Davis, Munsey Bldg., Wash. 4, D. C. consult. engr.

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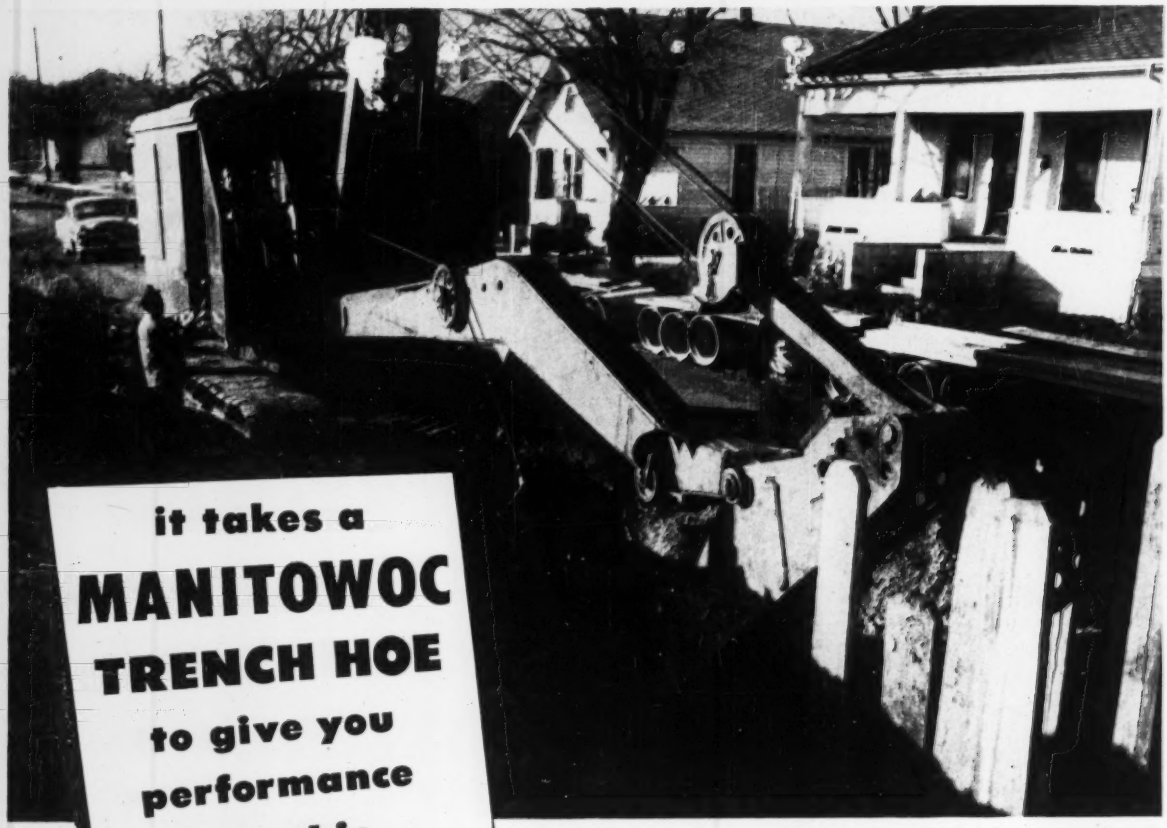

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Texas contractor E. E. Farrow of Dallas was awarded a sanitary sewer line in the city of Paris, Texas, through extremely rough terrain, consisting of hard shale, sandy clay and a treacherous quicksand. Although Farrow owned several large trenchers, they could not be used because the ditch walls caved in immediately upon excavation.

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A Manitowoc 2000-B trench hoe was placed on the job. The ditch was excavated from 18′ to 24′ deep. On the 24′ depth, digging a 54″ ditch, the 2000-B averaged between 80′ to 100′ of ditch per 8 hour day. Immediately behind the excavation operation it was necessary that every foot be cribbed. Under these conditions 80′ to 100′ of 24′ ditch per day is far above the average achieved with competitive machines of similar or even larger sizes. In the contractor's opinion, he was able to do 50% more per day with this Manitowoc than with any other equipment which he might have used on the job.

SAYS THE CONTRACTOR

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UNIT PRICES

Alaska Highway surfacing

Fifty miles of the Alaska Highway will be improved and paved under the terms of a $2,196,719 contract awarded by the Alaska Road Commission, Department of the Interior, William J. Niemi, chief engineer and contracting officer. The job went to a combination of three contractors, who submitted the lowest of four bids: C. F. Lytle Co.; Green Construction Co.; and S. Birch & Sons Construction Co., Seattle.

Work includes fifty miles of reconstruction, grading and drainage; twenty miles of bituminous surfacing; and thirty miles of temporary select surfacing. The select surfacing will be done with a disintegrated granite which compacts to a smooth, nearly dustless surface and is present locally over the entire length of the project. Included also is the construction of a two mile test section of plant mix bituminous surface course using the local granite material as an aggregate instead of the conventional crushed river gravel.

Skilled workers are receiving $3.42 per hr; semi-skilled workers, $3.27 per hr; and common laborers, $2.97 per hr. Bidders include:

1C C. F. Lytle Co., Green Const. Co. & S. Birch & Sons Const. Co., Seattle, Washington	$2,196,719
2 McLaughlin Inc., Great Falls, Montana	2,383,249
4 Morrison-Knudsen, Anchorage, Alaska	2,869,795

Bids: 3-3-53 Item	Unit	Quantity	Unit Prices 1C	2
Misc force account work	ls	1	$10,000	$10,000
Unclassified excavation	cy	450,000	1.25	1.80
Uncl exc for structure	cy	5,300	3.00	6.00
Uncl exc for borrow case 1	cy	60,000	0.75	0.80
Overhaul (1000' free haul) stay		1,825,000	0.02	0.02
Special overhaul of borrow (1000' free haul)	cymi	325,000	0.25	0.35
Watering	mgal	4,300	3.00	5.00
Provide & maintain water plant or plants	ls	1	11,000	1,500
Pit clearing	ac	46	300.00	400.00
Pit stripping	cy	120,000	0.40	0.30
Cr grav or cr stone base crse, cl 2, grading D-1	t	86,000	1.95	1.90
Select borrow surface crse	t	89,400	2.12	1.50
Med during cut-back asph, grade 1, prime coat	t	420	75.00	50.00
Blotter mat for prime coat	t	2,100	8.00	6.00
Cover aggr for type 3 seal, grading B	t	2,300	11.00	7.00
Rapid-cure cut-back asphalt, grade 3, seal coat	t	290	75.00	50.00
Cl F, pvmnt type F-1, plant mix, grading B-1	t	20,500	56.70	7.00
Rapid-cure cut-back asphalt, grade 3, type F-1	t	1,035	50.00	40.00
Dry plant mix aggr, grading B-1 in stockpiles	t	1,000	1.10	2.00
Tr timber, creo preserv, mfbm		5,508	750.00	600.00
Corr, galv sheet met culvert pipe 18"	lf	1,166	11.00	6.00
24"	lf	9,372	11.00	9.50
30"	lf	498	15.50	12.00
36"	lf	314	20.50	18.00
48"	lf	18	34.00	25.00
Rem, clean, stockpile, salv culvert pipe	lf	80	3.50	5.00
Rem, clean, relay salvaged culvert pipe	lf	704	5.00	7.00
Creo wood stave culv pipe, 18"	lf	512	15.00	6.00
24"	lf	304	20.00	9.50
30"	lf	44	35.00	12.00
Struct plate culv pipe,72"	lf	78	60.00	70.00
150"	lf	224	165.00	175.00
25" x16" corr galvsheetmetal culvert pipe	lf	46	9.00	10.00

Bids: 3-3-53 Item	Unit	Quantity	Unit Prices 1C	2
Corr galvpipe trans connec	ls	1	310.00	1,000
Rolling	hr	2,500	15.00	14.00
Reference monuments	ea	700	19.80	6.00
Meals served	ea	9,000	1.50	1.50
Lodgings furnished	ea	3,000	1.25	1.25

Airport paving, Detroit

Pavement construction and drainage for a portion of the apron area and connecting taxiways is now under way at the Detroit-Wayne airport. Under the jurisdiction of the Wayne County Board of Road Commissioners, the Loselle Const. Co., lowest of five bidders, is paving 46,611 sq yds with 12-in. reinforced concrete; excavating 8,300 cu yds; laying 12,000 cu yds of sub base material; and doing a small amount of drainage.

Skilled workers are receiving $3.13; semi-skilled, $2.60; and common laborers, $2.02 per hr. Bidders include:

1C Loselle Const. Co., Wyandotte, Mich	$300,036
2 Cook Constr. Co., Detroit, Mich.	332,558
5 Rockcrete, Inc.	366,304

Bids: 2-16-53 Item	Unit	Quantity	Unit Prices 1C	2
Pvmnt underdrns, 6" dia, in place (ASTM-C-200) incl porous backfill mat	lf	4,790	1.75	1.50
12" diasewer (st strength reinf conc culv pipe)	lf	125	5.50	4.00
MH or inlet struct comp	ea	1	385.00	300.00
Sewer connec to existing MH or inlet	ea	1	72.00	25.00
Adjust to grade existing MH or inlet	ea	2	78.00	30.00
Granular sub-base mat furn & consolidated in place	cy	12,028	1.70	1.50
12" reinf conc pvmnt incl all materials	sy	46,611	4.90	5.65
Stl reinforcement furn & placed n 12" conc pvmnt	sy	46,611	0.50	0.50
9" reinf conc pvmnt incl all materials	sy	1,500	4.40	4.75
Stl reinforcement furn & placed in 9" conc pvmnt	sy	1,500	0.50	0.50
Earth exc, unclassified	cy	3,488	0.75	1.00
Borrow excavation	cy	4,542	0.75	0.75
Conc encased elec power ducts (2-3") under pvmnt areas incl exc, backfill, duct markers & all material	lf	275	4.50	5.00
(4-3")	lf	170	6.00	6.00
(4-4")	lf	250	6.50	8.00
Break, remove & dispose of existing conc pavement	sy	322	3.00	2.00

Railroad tracks, New York

The New York Department of Public Works has awarded a $37,256 contract to the Railroad Construction Co., lowest of five bidders. The job consists of replacing side tracks with 100-lb rails at Letchworth Village, New York. Bidders include:

1C Railroad Const. Co., Paterson, N. J.	$37,256
2 Bonaco Const. Co., Inc., New York City, N. Y.	52,900
5 Horn Const. Co., Inc., Merrick, N. Y.	107,000
EE	58,115

Bids: 1-8-53 Item	Unit	Quantity	Unit Prices 1C	2
Track in ballast	lf	6,300	$5.83	$8.00
Track on trestle	lf	75	8.80	9.00
Bumping post	ls	1	260.00	588.00
Ties	ea	500	4.30	6.56
Switch stand	ls	1	110.00	425.00
Turnout	ls	1	2,387	3,900
Deduct credit to state for old metal	ls	1	5,040	6,368

HOW TO HANDLE
WET JOBS

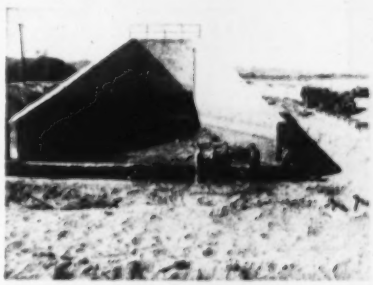
#19 of a series

BRIDGE PIER COFFERDAM

Winona, Minn.

Contractor: James Construction Co.

BEFORE DEWATERING. Earth cofferdam is shown around damaged and tilted center pier of bridge which had been washed away by Mississippi Spring floods. Griffin Wellpoint system (see photo, right) has 640-ft perimeter.



WITHIN 12 HRS, the 2 pumps have brought water below subgrade, wresting 5000 gal per min from the very coarse sand and gravel.

IN INSTALLATION, the wellpoints on this job had to be driven the last few feet, through gravel. Fortunately, Griffin's is the only point specifically designed for driving as well as jetting. Contractor was thus enabled to "breeze through" what might otherwise have proved a big headache.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd
Toronto Montreal Halifax

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 7 Massachusetts

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Farina Bros. Co.**, 429 Watertown St., Newton, Mass. LB $2,385,997, est. $2,500,000. Contr. SAMB-72-Proj. PR-2 constr. hanger, appurtenances, facilities, Logan International Airport, EAST BOSTON, MASS. State, State Airport, Management Bd., Gen. Boutwell Bldg., Logan International Airport, East Boston, Mass. Bids June 5. CD 5/13.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 6 New Jersey July 9 New York
STREETS AND ROADS
July 9 New York July 10 Pennsylvania
July 13 Delaware

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Zone 1.

Slattery Rock Corp., 46-36 54th Rd., Long Island City, N. Y., CA. $3,541,581 Major Deegan Expressway, Cont. 4, 1.31 mi. FA MDE 53-4, Bronx Co. Bids May 28. CD 6/2, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Zone 1, N. Y.

American Bridge Division, United States Steel Corp., 71 Broadway, New York, 6, N. Y., CA. $28,807,092 Contract C (combination) Tappan Zee Bridge New York State Thruway, Hudson Sect., Westchester Co. Bids Apr. 16. CD 420, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Zone 1, N. Y.

Lane Constr. Corp., 37 Colony St., Meriden, Conn., CA. $7,431,264, Mohawk State Thruway, Herkimer Co.;

Queens Structure Corp., 32-57 57 St., Woodside, N. Y. CA. $783,938, Sunken Meadow Spur Parkway, Cont. 5, Suffolk Co.;

A. E. Ottaviano, Inc., 82 Brook St., Croton-on-Hudson, N. Y., CA. $7,349,570, New York State Thruway, Catskill Sect., Ulster Co.; CA. $965,074, Sawmill River Parkway, Westchester Co. Grand total $16,529,-846. Bids Apr. 16. CD 4/20, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Zone 1.

Charles F. Vachris, Inc., 9024 Ditmas Ave., Brooklyn 36, N. Y., CA. $2,449,740, 0.47 mi. Major Deegan Expressway, Cont. 7A, FA MDE 53-3, Bronx Co.;

Dan Bar Contg. Co., 220 Pulaski St. and **W. E. O'Neil Constr. Co.**, Wilson Bldg., Syracuse, N. Y., CA. $1,491,039 New York State Thruway, Mohawk Sect. Sub 8B and Ontario Sect. Sub 8A (Electronic Parkway and Thompson Rd.); 2 interchanges; 4 access roads, Syracuse Bridgeport, Pt. 1, S.H. 672, 1.57 mi. Thy. 5.01 mi. Acc., M.T. 53-8, O.T. 53-8, S.T. 53-20, R.C. 53-36, Onondaga Co.;

Louis Longhi & Son, Inc., Box 580, Glens Falls, N. Y., CA. $742,397, City of Johnstown, Rt. 148 By-Pass (Chestnut St. to E. Main St. and Briggs St. to E. City Line); Fonda-Johnstown, S.H. 5906, 2.87 mi. FAC. 53-10, FARC 53-30, Fulton Co.;

John Arborio Inc., W. Cedar St., Poughkeepsie, N. Y. CA. $2,963,844, Palisades Interstate Parkway, Sect. 2 and Part 1, Coyles Cors. Short Cove, S.H. 9005 Valley Spring Mount Ivy, S.H. 1019 5.05 mi. Pkwy, 4.18 mi. Acc. PIP53-1, R.C. 53-29 Rockland Co.;

CA, $10,447,244, New York State Thruway Catskill Sec. Sub. 5 (Newburgh-New Platz, Pts 1 and 2); 1 interchange; 10 access roads; Cochecton Turnpike Pt. 1, S.H. 113; Newburgh-Shawangunk S.H. 161; Plattekille-Modena S.H. 306, 16.52 mi. Thy. 7.88 mi. Acc. C.T. 53-9, S.T. 53-20, R.C. 53-37 Orange and Ulster Counties. Bids May 7. Grand total $18,094,264.

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 N. Office Bldg., Harrisburg,

Francis A. Canuso & Sons, 173 W. Roosevelt Blvd., Phila., Pa., LB $5,221,534, constr. 3,531 ft. separated hy. variable in width, 3 I-beam, 1 rein.-con. and 2 plate girder bridges, sect. of Schuylkill Expressway, Philadelphia and Montgomery Counties. Bids June 12. CD 5/18.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn, 11 N. Fourth St., Harrisburg,

James D. Morrissey, Inc., 9119 Frankford Ave., Phila. 14, Pa., LB $6,058,773, structures, grading, drainage, paving 3.55 mi. Sect. 34-A, Delaware River Ext.; structures, grading, drainage, paving 3.07 mi. Sect. 34-B, Delaware River Ext., Bucks Co. Bids June 16. CD 6/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **A. A. Roth & Paul Roth**, c/o Schulman & Soloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y. Owner Builds. $5,000,000. 390 HOUSES, 96-acre tract, HUNTINGTON, N. Y.

▲ **West Hills Greens Homes**, c/o Schulman & Soloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y. Owner Builds. 224 HOUSES 62-acre tract West Hills Rd. and Jericho Turnpike, HUNTINGTON, N. Y.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 31 Tennessee

BIDS ASKED—BUILDINGS

▲ **Ga., Macon**—HOSPITAL—B.A. 7/19—City, hospital, $6,000,000. Extended date. Associated Hospital Architects, First Natl. Bank Bldg., archts. CD 4/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Princess Anne County School Bd.**, Princess Anne, Va. rejected bids June 10. Princess Anne County HIGH SCHOOL, at Thalia, PRINCESS ANNE, VA. LB $3,219,000. CD 5/22.

▲ **Swift Constr. Co.**, Swift Bldg., Columbus, Ga. CA, $4,000,000, SHOPPING CENTER, COLUMBUS, GA. Colonial Realty & Insurance Co., c/o contractor.

▲ **The Mackle Co., Inc.**, 2818 S.W. 22 St., Miami, Fla., Owner Builds. $3,525,150, 331 RESIDENCES, Key Biscayne, MIAMI, FLA.

▲ **South & Patton** (East Village Homes, Inc.), First Natl. Bank Bldg., Memphis, Tenn., CA. $4,422,244, construct, manage, finance 500 HOUSING units, OAK RIDGE, TENN. Management Services, Inc. (Atomic Energy Comn.) Oak Ridge, Tenn. Bids May 25. CD 6/2, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Ohio Dpts. Bldg., Columbus, Zone 15,

W. L. Johnson Constr. Co. & Assoc., Box 218, Bexley Station, Columbus, O. LB $2,304,196, Est. $2,698,-200. type T-71 and structures 7.848 mi., USR 23-0-00, AA-AF-11, Pike Co.;

V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, O. LB $483,803, Est. $537,400. type T-35 and structures 1.59 mi. SR 124-22.8, A-S-569 (11), Pike Co.;

W. H. Ringwald & Sons Co., Inc., 42 E. Second St., Chillicothe, O. LB $679,450, Est. $762,800. type T-35 on T-33 and structures 4.156 mi., SR 124-22-59, A-S-569 (12), Pike Co.;

Ohio Asphalt Paving Corp., 823 Prospect St., Portsmouth, O. LB $400,750, Est. $380,350. Part I type T-35 1.479 mi.;

The Red Eagle Corp., 176 Walhalla Rd., Columbus, O. LB $829,056, Est. $818,900. Part II type T-35 and structure 5.668 mi. USR 23-3-36; (5-99-8.08) A-F-626 (15) A-F-626 (16), F-626 (13) revised, Scioto Co.;

John R. Jurgensen, Newtown, O. LB $1,231,974, Est. $1,199,250, Parts 1 and 2. Bids June 12. CD 6/3.

▲ **Midwestern Constructors, Inc.**, 105 N. Boulder St., Tulsa, Okla., CA. Est. $8,000,000, 153 mi. sect. of 16 in. pipe line to carry gasoline and fuel oil from East Chicago, Ind., to Detroit, via Toledo, O. INDIANA, OHIO and MICHIGAN. Wolverine Pipe Line Co., 11 W. 42 St., New York 36, N. Y. CD 2/25.

▲ **Wayne Co.**, Christopher J. Mulle, co. drain comr., 3800 Cadillac Tower, Detroit, Mich. rejected bids June 5, Middle Rouge Interceptor Sewer, DETROIT, MICH. Est. $4,500,000. CD 4/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The Richardson-Wayland Electric Corp.**, below Memorial Bridge S. W., Roanoke, Va., CA Approx. $2,900,-000, installing electrical equip. at Kyger Creek Steam-Electric GENERATING PLANT, CHESHIRE, O. Ohio Valley Electric Corp., 30 Church St., New York 8, N. Y. CD 8/22 under CA.

▲ **Mellon-Stuart Co.**, 210 E. Park Way, Pittsburgh, Pa., LB $3,769,800, HOSPITAL addn., modernizing, YOUNGSTOWN, O. St. Elizabeth Hospital, Sister M. Adelaide, supt., 1044 Belmont Ave., Youngstown, O. Bids June 11. CD 5/12.

▲ **McCarthy Constr. Co.**, 4903 Delmar Blvd., St. Louis, 8, Mo., CA, $3,849,400, general contract HOSPITAL, EVANSVILLE, IND. St. Mary's Hospital, 173 First Ave., Evansville, Ind. Bids Apr. 8. CD 4/24, under LB.

▲ **Badger Mfg. Co.**, 260 E. 42 St., New York, 17, N. Y., CA, $3,000,000. extend steam and producing para-xylene PLANT addn., WHITING, IND. Standard Oil of Indiana, 910 S. Michigan Blvd., Chicago 5, Ill. Awarded May 17.

▲ **Leonard W. Bessinger**, Carpentersville, Ill., Owner Builds, $4,000,000. 400 HOMES, sewers and streets, CARPENTERSVILLE, ILL. Awarded June 8.

▲ **Paul L. Fager**, 1012 S. 17 Ave., Maywood, Ill. Owner Builds, $3,000,000, 300 HOMES, HILLSIDE, ILL. Lambert Soucek, 49 S. Washington St., Hinsdale, Ill., archts. Awarded June 8.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York, N. Y. CA Est. $9,500,000. two 15 story, brick, steel APARTMENTS to house 996 families, 9000 E. Jefferson St. near Memprial Park, DETROIT, MICH. One Riverhouse, Inc., c/o Lambretch Realty Co., 1780 Penobscot Bldg., Detroit, Mich. Mayer I. Blum & Sons, 2601 Parkway, Phila., Pa., archts.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 30 Iowa, Kansas July 2 Missouri
July 7 Oklahoma, Wisconsin July 14, 15 Texas
STREETS AND ROADS
June 30 Iowa, Kansas July 2 Missouri
July 7 Wisconsin July 14, 15 Texas

BIDS ASKED—BUILDINGS

▲ **Colo., Denver**—STORE—B.A. 6/30—Sears, Roebuck & Co., 935 S. Homan Ave., Chicago, Ill., multi-story 222,000 sq. ft., brick, steel store, E. 1 Ave. and S. University Blvd., $4,000,000. T. H. Buell & Co., 730 14 St., engrs. and archts. CD 3/24.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **List & Clark Constr. Co.**, Railway Exchange Bldg., Kansas City, Mo., LB $5,114,399, Const. earthwork, Stage 5, for Fort Randall reservoir proj., Lake Andes. Inv. 25-066-53-242. SOUTH DAKOTA U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 16. CD 5/6.

▲ **R. H. Fulton & Co. and Lone Star Constructors**, Midland, Tex., CA. $5,855,000, Sect. 1, 92 mi. 30 in. welded joint gas line, incl. 52 mi. exten. from Dumas to Sunray, to main line point north of Canadian River and two 20 mi. loops near Beaver, Okla.; Sect. 2, 70 mi. 30 in. gas lines in areas of Mullinville, Bushron, Kan. and north of Palmyra, Neb. OKLAHOMA, KANSAS, NEBRASKA. Northern Natural Gas Co., Aquilla Court Bldg., Omaha 1, Neb. CD 10/9.

▲ **R. H. Fulton & Co.**, Midland, Tex., CA. $11,200,000, 280 mi. 20- to 30-in. natural gas main lines in areas of Midland, Tex. and Hobbs, N. M.; CA $7,770,-000, 259 mi. 14- to 26-in. gas gathering lines, Midland, Tex., Hobbs, N. M. areas, TEXAS and NEW MEXICO. Permian Basin Pipe Line Co., Rankin, Tex. CD 5/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **T. H. Maenner, Inc.**, 808 City Natl. Bank Bldg., Omaha, Neb. Owner Builds $2,500,000, 250 DWELLINGS, vicinity of 37 and Grover Sts., OMAHA, NEB.

▲ **Manhattan Constr. Co.**, Manhattan Bldg., Muskogee, Okla., CA Approx. $3,000,000. 12 story OFFICE, 9th and Detroit Sts., TULSA, OKLA. Ninth & Detroit Corp., c/o Sunray Oil Corp., 1st. Natl. Bldg., Tulsa, Okla. H. R. Humphreys, 1st. Natl. Bldg., Tulsa, Okla. archt. Awarded June 10.

▲ **E. I. duPont de Nemours & Co.**, Beaumont, Tex. Own Forces, $4,000,000, synthetic methionine PLANT; $385,000, WAREHOUSE; $240,000, MACHINE-EQUIP. REPAIR SHOP, BEAUMONT, TEX. Grand total $4,625,-000. CD 4/2.

▲ **Chemical Processes, Inc.**, c/o J. O. Brown, supt., c/o owner, CA $2,750,000. nitric acid PLANT, ETTER (P. O. Dumas), TEX. Phillips Petroleum Co., Bartlesville, Okla. CD 4/8.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Westinghouse Electric Corp.**, Union Bank Bldg., Pittsburgh, Pa., CA, $4,299,822, four generators for Chief Joseph Dam, Bridgeport, WASHINGTON, U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids June 1. CD 6/5, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 8 British Columbia

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **George Hardy, Ltd.**, 163 Wicksteed Ave., Toronto, Ont., LB $2,500,000 six-story, 121x310 ft. steel-brick GARAGE and OFFICE bldg., concrete fdn., Front and Simcoe Sts., TORONTO, ONT. Canadian National Rys., K. Huffman, ch. eng; Union Station, Toronto, Ont. Bids May 20. CD 4/21.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Carson Constr. Co.**, Box 1153, Helena, Mont., LB. $2,780,770, HIGH SCHOOL, Proj. 50-A-5, KETCHIKAN, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids June 9. CD 5/27.

(Proposal Advertisements see pp. 85 to 88)

Moving Day for the St. Lawrence

MOVING A RIVER may sound fantastic, but the Ellicott-designed "Hydro-Quebec," world's largest hydraulic pipe line dredge, has begun work on a project that will eventually divert practically the entire flow of the St. Lawrence River! The project is part of the expansion program of the Quebec Hydro-Electric Commission. When completed, the Commission's installation at Beauharnois, Quebec, will be the largest single-site hydro-electric plant in the world, with electrical output of more than two million horsepower.

Main work of the "Hydro-Quebec" consists of widening and deepening the 15-mile Beauharnois Canal to provide the necessary volume of water to operate the plant. This channel will also serve as a navigation canal which, when tied in with the proposed St. Lawrence Waterway by locks, will permit passage of ocean going vessels.

* * *

Whether *your* dredging problem is moving rivers or maintaining irrigation canals, or any of a thousand other projects, Ellicott's 67 years of experience in the engineering, design, manufacture, modernization and operation of dredges can help *you*. For more information about Ellicott dredges and dredging services, write for Catalog 825 to: ELLICOTT MACHINE CORPORATION, 1603 Bush Street, Baltimore 30, Md.

Ellicott Dragon® *Completely New, Highly Versatile* Portable Dredges

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ELLICOTT DREDGES

Photos by Linkscales

DREAM HOME gets rapt looks from Elaine and Bill Williams, who were looking for ideas on layout. This model by Forrest Allen is one of a series in the "Homes on Parade" section (anonymous designs by A.I.A. architects).

Home show draws 200,000 in Los Angeles

The "show" idea is spreading in the building-materials and construction industries: competitors bringing their products together in one place where a lot of potential buyers can look them over. Last week, ENGINEERING NEWS-RECORD covered a New York City show designed to attract retailers interested in modernizing old stores and building new ones (ENR June 18, p. 106). And here is the 1953 Los Angeles Home Show, sponsored by the local Chamber of Commerce and 13 construction industry trade associations. This big exhibit gave building-materials people, development builders, and architects a chance to show their stuff. In about 10 days, 200,000 persons attended.

ENR's camera followed a young couple, Elaine and Bill Williams, who live in an apartment but plan to buy or build in the next couple of years. They went to the Home Show partly because they're just generally interested in houses—but specifically to add to their fund of ideas on what and what not to look for when they're ready.

Here are some of the things they saw (pictures). They also examined two full-scale models by home builders, and plenty of brand-name products including roofing, plastic panels, kitchen appliances, and breakfast nooks.

"WONDERFUL" was Elaine's reaction to these floor-to-ceiling shutters by Heinley Mastercraft Products, Santa Monica. Like most Californians, she wants large picture windows, felt these would be good substitutes for drapes.

COST FIGURES on garbage disposers were what Elaine and Bill wanted at this Waste King booth (Given Mfg. Co., Los Angeles). They have a disposer in their apartment, so they already know it would be hard to do without.

AIR CONDITIONING, this Carrier man convinced Elaine and Bill, should be put in when the house is built. He told them there's a difference between "conditioning" air and just cooling it by small window installations.

BREAK TIME gave Williamses a chance to talk it over. Said Elaine: "Let's start building." Said Bill: "Oh, sure." Whether or not the show advances their schedule, it will certainly change their plans. They'll remember some brand names they saw.

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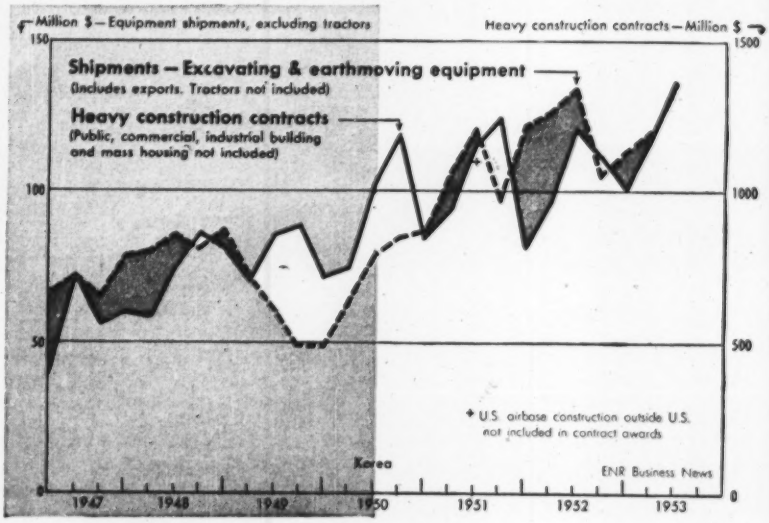


Equipment shipments may follow trend of awards

The present high rate of heavy construction contract awards suggests that sales and rentals of excavating and earthmoving equipment should hold up well this year.

The chart (above) shows that shipments of equipment as reported by the Census Bureau usually follow the trend of heavy construction, as shown by contract awards reported to ENGINEERING NEWS-RECORD in fields where excavating and earthmoving machinery is most heavily used. In order to show this trend, public, commercial, industrial, and residential building awards have been eliminated.

During the first quarter, these heavy construction (non-building) awards totaled nearly $1,174 million, up 31% from the similar 1952 period. And in the first 12 weeks of this quarter, awards have already set a new record of $1,275 million for any quarter, 17% more than the similar 1952 period.

On a percentage basis, shipments of equipment have lagged behind awards. Total shipments (excluding tractors) were 6% behind the record first quarter of 1952, when they totaled $127 million. The Census Bureau has run into delays in reporting tractor shipments, which represented 42% of total equipment shipments last year. It's expected that they will be picked up when second-quarter shipments are reported in August.

The overall total conceals some interesting trends in the various types of equipment. Power shovels and cranes, which account for nearly half of the shipments shown on the chart, hit a new high for any quarter with $54.4 million. That's 5% above the similar 1952 quarter. Equipment for mounting on tractors climbed 23%. But shipments of road construction and maintenance machinery dropped 23%, and the trucks and trailers category was off 29%. Portable well blast hole drills increased the most, percentagewise, with a 36% gain. Shipments were $2.2 million, an all-time high.

Economy damps expansion in Tennessee Valley area

Lack of power may prevent building of new chemical and other industrial plants in the Tennessee Valley, because economy-minded congressmen are taking a close look at the Tennessee Valley Authority's operations.

Low-price electric power has been TVA's stock in trade—the economic reason for its existence and for the business expansion that has taken place since it began selling electricity in 1933. But its supply of unsold power is running out—so that big power-consuming chemical plants will have a difficult time expanding their already considerable foothold in the seven-state area comprising the Tennessee Valley.

TVA's own figures show it won't have enough power to meet peak loads by the winter of 1954-1955. It will have barely enough to squeeze by the coming winter. Present customers

have little to worry about, since the authority can bring in power temporarily from surrounding areas to meet abnormal demand but the tight supply, combined with rising rates, is enough to discourage heavy power users for some time to come.

TVA's planned power expansion has been cut back by Congress. Legislators figure that during the 20 years of TVA's existence, it has spent $1.6 billion of taxpayers' money, returned only $67 million.

This money has helped to create an industrial revolution in the Tennessee Valley. In 1929, about 23% of the region's income came from agriculture, while manufacturing provided only 15%. By 1950, these positions were reversed, with manufacturing providing 20% compared with 13% for agriculture.

Lately, TVA has been increasing its industrial power rates because of higher steam costs and purchases from outside utilities, but even so its price for industrial power—about ½¢ per kw hour—remains about half the average U. S. rate.

Home builders sing blues before Senate committee

Representatives of the home building industry told the Senate Banking Committee last week that the housing industry is due for trouble unless the government permits lower down payments to be made on FHA and VA mortgages.

William J. Levitt, the well-known development builder, told the committee that the industry is already "on the skids." The National Association of Home Builders, through its president, Emanuel M. Spiegel, said that lower down payments are essential if the present level of housing starts is to be maintained.

Meanwhile, a survey by the National Association of Real Estate Boards indicates that would-be borrowers on conventional mortgages are having trouble finding funds. Especially is this the case in the smaller cities.

Correction

On page 104 of the June 18 issue, ENR quoted spokesmen of the National Association of Building Owners and Managers as estimating that about $1 billion worth of new offices are now under construction or planned for construction during the next two or three years, as compared with an estimated $600 million actually spent on office building since the start of 1947. The correct estimate for the next two or three years is $400 million, not $1 billion.

Activity This Week

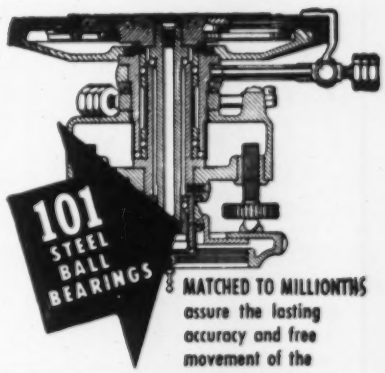
As reported to ENR (in millions of dollars)

Amount of contracts let

	This Week	Cumulative 26 wks 1953	1952	% chge
Federal	$53.4	$807.0	$1,065.2	−24
State and Municipal	158.9	2,578.3	2,138.7	+21
Total pub.	212.3	3,385.3	3,203.9	+6
Total priv.	272.1	4,586.4	3,578.8	+28
U. S. Total	$484.4	$7,971.7	$6,872.7	+18
Contracts by type of work				
Waterworks	$6.8	$126.8	$117.8	+8
Sewerage	7.7	196.9	128.0	+54
Bridges	31.1	380.4	194.5	+96
Highways	78.5	888.5	740.5	+20
Earthwork, Waterways	35.8	216.1	284.1	−24
Buildings:				
Public, excl. hsg.	22.4	879.3	945.1	−7
Housg., pub.	5.6	267.8	436.5	−39
Housg., priv.	78.6	2,039.3	1,479.2	+38
Commercial	14.3	545.2	317.0	+72
Industrial	37.1	1,464.1	1,499.3	−2
Unclassified	166.5	967.3	640.7	+51
Total	$484.4	$7,971.7	$6,782.7	+18

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		1953	Base Years = 100 1913	1926	1949
Construction cost	Jun	593.35	285.22	124.39	
	May	589.21	283.23	123.52	
Building cost	Jun	426.65	230.63	121.28	
	May	426.47	230.54	121.23	
Volume	May	499	203	144	



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OFFICIAL PROPOSALS

Bids: July 7, 1953

NOTICE TO BIDDERS

Construction of Structures

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Daylight Saving Time, the 7th day of July 1953, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

For the construction of structures, and the grading, drainage and paving of Turnpike Section 34-C, part of the Delaware River Extension of the Pennsylvania Turnpike in Bensalem and Bristol Townships, **Bucks County, Commonwealth** of Pennsylvania, this section being situated as follows:

Beginning at a point 432 feet east of the center line of L. R. 150 Spur at Turnpike Station 479+52. 03 in Bensalem Township, Bucks County; thence in an easterly direction 16,648 feet to a point approximately 82.35 feet west of the center line of L. R. 150, U. S. 13 at Turnpike Station 646+00 in Bristol Township, Bucks County, a distance of approximately 3.15 miles.

The approximate quantities of the principal items are as follows:

Class 1 Excavation	338,300 cubic yards
Class 2 Excavation	12,745 cubic yards
Class 2A Excavation	11,410 cubic yards
Borrow Excavation	929,000 cubic yards
Special Subgrade	224,515 square yards
Reinforced Concrete Pavement	114,840 square yards
Class "A" Concrete	3,670 cubic yards
Class "B" Concrete	13,530 cubic yards

Copies of plans, specifications and other contract documents, including cross-sections, are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania on 19 June 1953. Plans, specifications, cross-sections, and other contract documents will not be available before this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty (50) dollars per set.

Plans and contract documents, for this section, exclusive of cross-sections and specifications may be obtained from the Commission upon deposit of ten (10) dollars for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans, contract documents, and cross-sections returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James. F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
12 June 1953

Bids: August 11, 1953

Filter Building, Weir Chamber, Wash Water Building, Switch House, and Office Building

NORTHEAST STATION
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN
CONTRACT NO. NE-6

Sealed proposals for the construction of the Filter Building, Weir Chamber, Wash Water Building, Switch House and Office Building for the Northeast Station, at 11000 East Eight Mile Road, will be received by the Board of Water Commissioners of the City of Detroit. Proposals shall be addressed to the Board of Water Commissioners, City of Detroit, Room 506 Water Board Building, 735 Randolph Street, Detroit 26, Michigan, and shall be endorsed "Proposal for Contract No. NE-6". Proposals will be received until 10:00 A.M. Eastern Standard Time, August 11, 1953, at which time they will be opened and read aloud in the Board Room, Fifth Floor, Water Board Building, 735 Randolph Street, Detroit 26, Michigan.

Included in the work is the construction, mainly upon existing reinforced concrete foundations, of the substructures and superstructures of the Filter Building, Weir Chamber, Wash Water Building, Switch House, Office Building, and appurtenant structures. The Filter Building, approximately 230 feet by 380 feet in plan, with under filter storage, will have 48 rapid sand filter units each with an effective area of 1089 square feet; the roof will be of the thin shell concrete barrel type. The one story Office Building will be constructed on the Weir Chamber which is approximately 51 feet by 245 feet in plan. The Switch House, approximately 59 feet by 143 feet in plan, will be a two story structure above grade. The Wash Water Building, approximately 30 feet by 140 feet in plan, will be four stories above grade, and will include two 50,000 gallon tanks, and miscellaneous mechanical and electrical equipment. The substructures are to be constructed of reinforced concrete, and the superstructures are to be constructed with reinforced concrete frames and slabs, masonry walls with limestone and granite facing and glazed tile interior finish. The work also includes the furnishing and installation of pumps, sluice gates, wash water troughs, rate controllers, filter underdrain system, drain lines, chlorine feed equipment, instruments and control equipment, complete heating, ventilating, plumbing and miscellaneous piping systems, electrical power and lighting.

The Contract Documents, including the Notice to Bidders, the Forms of Proposal and Agreement, the Specifications, and the Contract Drawings may be examined during business hours, at the office of the Department of Water Supply, Room 706 Water Board Building, Detroit, Michigan. The Contract Documents may be obtained by making a deposit of Seventy-Five Dollars ($75.00) per set, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty (30) days after the bid date, or if used in making a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract.

No proposal may be withdrawn for at least sixty (60) days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept any bid, or to reject any or all bids, should it deem it to be in the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISIONERS
George A. Schaffer, President
Alfred J. Simpson, Vice-President
Harvey A. Wagner
Oscar A. Wagner
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer
Acting Secretary

Bids: July 20, 1953

Trunk Sanitary Sewer for the City of Lancaster Lancaster, Pennsylvania

Sealed proposals will be received by the City of Lancaster at the office of the City Controller in the Municipal Building, Lancaster, Pennsylvania until 10:00 A.M., Eastern Daylight Saving Time, July 20, 1953, at which place and hour they will be publicly opened and read. Proposals shall include the furnishing of all necessary labor, materials and equipment, and performing all work for the construction of a Trunk Sanitary Sewer approximately 9500 feet long.

Each proposal shall be accompanied by a certified check or a bid bond in an amount of not less than (10 per cent of the bid total.

Copies of the Contract Documents, including Drawings and Specifications will be on file for inspection purposes only at the office of the City Engineer, Municipal Building, Lancaster, Pennsylvania; they may also be seen at the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 605 North Second Street, Harrisburg, Pennsylvania, from whom they may be obtained, upon deposit of Twenty Dollars ($20.00) for

(Continued on the following page)

OFFICIAL PROPOSALS

each set. Full refund will be made to actual bidders only for return of one set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) per cent of deposit.

City of Lancaster
Lancaster,
Pennsylvania

Gannett Fleming Corddry & Carpenter, Inc., Engineers,
600 North Second Street
Harrisburg, Pennsylvania

Bids: July 7, 1953

New Jersey Turnpike Authority

NEW BRUNSWICK, N. J.

Sealed proposals will be received by the New Jersey Turnpike Authority for:

Contracts No's. 97-A and 98-A—General Construction
Contracts No's. 97-B and 98-B—Structural Steel and Miscellaneous Metal
Contracts No's. 97-C and 98-C—Heating, Ventilation and Refrigeration
Contracts No's. 97-D and 98-D—Plumbing and Drainage
Contracts No's. 97-E and 98-E—Electrical Work

required in connection with additions and alterations to Service Buildings as shown on the Plans and described in the Specifications for

Service Areas 1-N and 1-S in Salem County and 3-S in Camden County under the group of contracts bearing the designation 97 and
Service Areas 7-S and 8-N in Middlesex County under the group of contracts bearing the designation 98,

all located along the New Jersey Turnpike.

Proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, on the morning of July 7, 1953 until 11:00 A.M., Eastern Daylight Saving Time, at which time and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposals a revised financial statement and a statement of plant and equipment.

Contract documents may be seen and inspected by prospective bidders during office hours after June 18, 1953 at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, and at the office of the General Architects, Alfred Fellheimer and Steward Wagner, 155 East Forty-Second Street, New York 17, New York.

Contract documents will be furnished on the payment of Five Dollars for each set, upon application to the New Jersey Turnpike Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for the Construction of the New Jersey Turnpike, Second Edition, August 1950, and must be enclosed in sealed, specially addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a Certified Check drawn to the order of the New Jersey Turnpike Authority, and a Proposal Bond, each for not less than five percent of the amount of the proposal, but not less than Five Hundred Dollars nor more than Two Hundred Thousand Dollars, and must be delivered at the place designated above on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for the proposal bond, of the form to be used for the financial statement, and for the plant and equipment statement to be submitted with the proposal and of the specially addressed envelope are furnished in detached form with the contract documents.

Where proposals are submitted for more than one Contract, one check and one bond based on the total prices bid for the largest amount of work included in any combination of proposals, will be sufficient.

The Contract will be awarded or the proposals rejected within thirty days from the date of opening proposals. The right is reserved to reject any—or all proposals or to accept that proposal which, in its sole judgment, the Authority deems to be in its best interests.

NEW JERSY TURNPIKE AUTHORITY
PAUL L. TROAST, Chairman

Bids: July 22, 1953

Contract C-11
Contract C-12
Contract C-11 & 12

NOTICE TO BIDDERS

Sealed proposals will be received by the Ohio Turnpike Commission for the performance of each of the contracts enumerated above.

The work covered by Contract C-11 consists generally of the construction of grading, drainage, structures and paving of approximately 5.03 miles in Construction Section 11 of Ohio Turnpike Project No. 1, beginning at a point about 350 feet East of Kent-Mantua Road at Turnpike Centerline Station 291+20 and extending eastwardly to the Freedom Township line at Turnpike Centerline Station 556+60, all in Portage County, and the construction of an engineer's office and laboratory building and facilities on or near the site of the work.

The work covered by Contract C-12 consists generally of the construction of grading, drainage, structures, and paving of approximately 4.44 miles in Construction Section 12 of the Ohio Turnpike Project No. 1, beginning at a point about 183 feet east of State Route No. 14 at Turnpike Centerline Station 56+50 and extending eastwardly to a point about 350 feet east of Kent-Mantua Road at Turnpike Centerline Station 291+20, all in Portage County, and the construction of an engineer's office building and facilities on or near the site of the work.

The work covered by Contract C-11 & 12, which covers a combination of Construction Sections 11 and 12, is the construction as above and elsewhere herein generally described for the individual Construction Sections taken together.

In Construction Section 11, the principal structures to be built are three reinforced concrete box culverts, and five steel beam bridges of from three to four spans each supported on reinforced concrete abutments and bents. The abutments of three bridges are to be on cast-in-place reinforced concrete piles and the abutments of two bridges are to be on rock. The bents of three bridges are to be on cast-in-place reinforced concrete piles and the bents of two bridges are to be on spread footings.

In Construction Section 12, the principal structures to be built are five reinforced concrete box culverts, and six steel beam bridges of from three to five spans each supported on reinforced concrete abutments and bents. The abutments and bents of all of the bridges are to be on cast-in-place reinforced concrete piles.

Approximate quantities of the major items of construction for Contract C-11 are as follows:

Roadway Excavation, 1,530,000 cubic yards; Borrow, 500,000 cubic yards; Structural Concrete, 8,400 cubic yards; Reinforcing Steel, 1,147,000 pounds; Fabricated Structural Steel (excluding furnishing and fabrication), 1,160,000 pounds; 10" Reinforced Concrete Pavement, 140,000 square yards; Culvert Pipes and Underdrains, 13,000 lineal feet.

Approximate quantities of the major items of construction for Contract C-12 are as follows:

Roadway Excavation, 1,286,000 cubic yards; Structural Concrete, 8,000 cubic yards; Reinforcing Steel, 1,124,000 pounds; Fabricated Structural Steel (excluding furnishing and fabrication), 1,506,000 pounds; Concrete Piling, 17,000 lineal feet; 10" Reinforced Concrete Pavement, 125,999 square yards; Culvert Pipes and Underdrains, 17,000 lineal feet.

For each contract, fabricated structural steel and expansion and/or contraction joints will be furnished by the Commission.

Insofar as this notice pertains to the work to be done on Construction Section 11, it is a readvertisement. Proposal forms, Plans, Cross Sections, and Special Provisions for Construction Section 11 as formerly advertised are now obsolete. Any person who obtained any of these documents pursuant to the former advertisement and desires to bid for said Construction Section must obtain a new set of Contract Documents for the letting advertised in this notice, except that he need not obtain a new set of General Specifications or of those Supplemental Specifications already in his possession and applicable to any or all of these contracts, as set forth in the Special Provisions comprising a part of the new Contract Documents.

Copies of the Plans and General Specifications for said Contracts will be available on and after June 22, 1953 for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1, $5.00; Plans (also soil profiles and boring logs), per set, per construction section, $15.00; Cross Sections, per set, per construction section, $25.00.

Forms or copies of all remaining Contract Documents, including Proposals for each of the Contracts set forth above; the Affidavit which must accompany any such Proposal; this Notice to Bidders; the Special Provisions apply to said Contracts; the Contract to be entered into with the (or each) successful Bidder; and the Contract Bond to be furnished with such Contract, will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office on and after June 25, 1953.

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check or checks, on a solvent bank or banks, payable to the order of the Ohio Turnpike Commission, in an amount not les than 5 percent of the amount bid, or, if the Bidder shall tender bids for more than one contract, said amount shall be not less than 5% of the highest total amount which could be the basis of an award or awards to him. The Commission may at any time cash any such check. Each such check, or the proceeds thereof, will be held by the Commission as a guaranty that, if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications provided, that if there be a forfeiture, it shall be of an amount equal to 5% of the total amount bid in the Proposal with respect to which the forfeiture occurs, and any excess will be returned to the Bidder.

All bids must be received at or before 10:00 A.M., Eastern Standard Time, July 22, 1953, in the offices of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At said hour, the bid box will be removed to the Neil House Hotel, 41 South High Street, Columbus, Ohio, where all Proposals will be publicly opened and read.

The award of any of the above-enumerated contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION

Bids: July 9, 1953

THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 144

Unit Sub-station

Sealed proposals for the supplying of a Unit Sub-Station for the Base Facility Area at New York International Airport, Jamaica, N. Y., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11:00 A.M. (EDST), Thursday, July 9, 1953, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, June 25, 1953

Read the Official
Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: July 15, 1953

Contract C-8
Contract C-9
Contract C-10
Contract C-8 & 9
Contract C-9 & 10
Contract C-8, 9 & 10

NOTICE TO BIDDERS

Sealed proposals will be received by the Ohio Turnpike Commission for the performance of each of the contracts enumerated above.

The work covered by Contract C-8 consists generally of the construction of grading, drainage, structures, and paving of approximately 4.69 miles in Construction Section 8 of Ohio Turnpike Project No. 1, beginning at a point about 1.75 miles northeast of Newton Falls near the Ravenna-Warren Road at Turnpike Centerline Station 215+00 in Trumbull County, and extending in a northwesterly direction to a point about 0.65 miles west of the Trumbull County line at Turnpike Centerline Station 1042+66 in Portage County, and the construction of an engineer's office building and facilities on or near the site of the work.

The work covered by Contract C-9 consists generally of the construction of grading, drainage, structures, and paving of approximately 4.61 miles in Construction Section 9 of Ohio Turnpike Project No. 1, beginning at a point about 0.65 miles west of the Trumbull County line, said point being the same as Turnpike Centerline Station 1042+66 in Portage County and extending in a westerly direction to a point about 5.25 miles west of the Trumbull County line and about 0.6 mile north of State Route No. 303 at Turnpike Centerline Station 799+78 in Portage County.

The work covered by Contract C-10 consists generally of the construction of grading, drainage, structures, and paving of approximately 4.6 miles in Construction Section 10 of Ohio Turnpike Project No. 1, beginning at a point about 5.25 miles west of the Trumbull County line and about 0.6 mile north of State Route No. 303 at Turnpike Centerline Station 799+78 in Portage County and extending in a westerly direction to a point about 0.5 mile west of the Limeridge Road at Turnpike Centerline Station 556+60 in Portage County, and the construction of an engineer's office building and facilities on or near the site of the work.

The work covered by Contracts C-8&9; C-9&10; and C-8, 9&10, which consist of various combinations of Construction Sections 8, 9, and 10, is the construction as above generally described for the individual Construction Sections in each combination contract.

In Construction Section 8, the principal structures to be built are one reinforced concrete box cuvert and eleven steel beam bridges of from three to four spans each supported on reinforced concrete abutments and bents. The abutments of eight of the bridges are to be on steel piles, the abutments of two of the bridges are to be on concrete piles and the abutments of one bridge are to be on rock. The bents of five of the bridges are to be on steel piles, the bents of four of the bridges are to be on spread footings and the bents of two of the bridges are to be on steel piles.

In Construction Section 9, the principal structures to be built are one reinforced concrete box culvert, and five steel beam bridges of from three to four spans each supported on reinforced concrete abutments and bents. The abutments of four of the bridges are to be on steel piles and the abutments of one bridge are to be on rock. The bents of three of the bridges are to be on spread footings and the bents of two of the bridges are to be on steel piles.

In Construction Section 10, the principal structures to be built are one reinforced concrete box culvert, and five steel beam bridges of four spans each supported on reinforced concrete abutments and bents. The abutments of all bridges are to be on steel piles. The bents of one of the bridges are to be on spread footings and the bents of the four bridges are to be on steel piles.

Approximate quantities of the major items of construction for Contract C-8 are as follows:

Roadway Excavation	655,000 Cu. Yds.
Borrow	1,937,000 Cu. Yds.
Structural Concrete	12,000 Cu. Yds.
Reinforcing Steel	1,763,000 Pounds
Fabricated Structural Steel (excluding furnishing and fabrication)	2,968,000 Pounds
Concrete Bearing Piles	28,000 Lin. Ft.
Steel Bearing Piles	25,000 Lin. Ft.
10" Reinforced Concrete Pavement	149,000 Sq. Yds.

Approximate quantities of the major items of construction for Contract C-9 are as follows:

Roadway Excavation	1,024,000 Cu. Yds.
Borrow	129,000 Cu. Yds.
Structural Concrete	6,200 Cu. Yds.
Reinforcing Steel	674,000 Pounds
Fabricated Structural Steel (excluding furnishing and fabrication)	902,000 Pounds
Steel Piling	7,000 Lin. Ft.
10" Reinforced Concrete Pavement	125,000 Sq. Yds.

Approximate quantities of the major items of construction for Contract C-10 are as follows:

Roadway Excavation	990,000 Cu. Yds.
Structural Concrete	3,200 Cu. Yds.
Reinforcing Steel	472,000 Pounds
Fabricated Structural Steel (excluding furnishing and fabrication)	770,000 Pounds
Steel Piling	7,000 Lin. Ft.
10" Reinforced Concrete Pavement	130,000 Sq. Yds.

For each Contract, fabricated and structural steel and structural expansion and/or contraction joints will be furnished by the Commission.

This is a readvertisement of the work to be done on each of Construction Sections 8, 9, and 10. Proposal forms, Plans, Cross Sections and Special Provisions for each of Contracts C-8, C-9, and C-10 as formerly advertised are now obsolete. Each person who bid pursuant to the former advertisement and desires to bid again for these Construction Sections, or any of them, must obtain a new set of Contract Documents for the letting advertised in this notice, except that he need not obtain a new set of General Specifications or of those Supplemental Specifications already in his possession and applicable to any or all of these contracts, as indicated in the Special Provisions comprising a part of the new Contract Documents.

Copies of the Plans and General Specifications for said Contracts will be available on and after June 15, 1953 for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said chief engineer for the following sums, per set, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1.....$ 5.00
Plans (also soil profiles and boring logs), per set, per construction section.... 15.00
Cross Sections, per set, per construction section 25.00

Forms or copies of all remaining Contract Documents, including Proposals for each of the Contracts set forth above; the Affidavit which must accompany any such Proposal; this Notice to Bidders; the Special Provisions applying to said Contracts; the Contract to be entered into with the (or each) successful Bidder; and the Contract Bond to be furnished with such Contract, will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office on and after June 30, 1953.

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check or checks, on a solvent bank, or banks, payable to the order of the Ohio Turnpike Commission, in an amount not less than 5 percent of the amount bid, and, in the case of a multiple bid, of the highest total which can be obtained by adding the contract prices of any group of contracts which could be awarded to the Bidder on the basis thereof. The Commission may at any time cash any such check. Each such check, or the proceeds thereof, will be held by the Commission as a guaranty that, if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured. Each such check, or the proceeds thereof, will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications provided that if there be a forfeiture, it shall be of an amount equal to 5% of the total amount bid in the Proposal with respect to which the forfeiture occurs, and any excess will be returned to the Bidder.

All bids must be received at or before 10:00 A.M., Eastern Standard Time, July 15, 1953, in the offices of the Ohio Turnpike Commission, 139 East Gay Street, Columbus 15, Ohio. At said hour, the bid box will be removed to the Neil House Hotel, 41 South High Street, Ohio where all Proposals will be publicly opened and read.

The award of any of the above-enumerated Contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION

Bids: July 14, 1953

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT

Metalclad Switchgear for Switch House

CONTRACT NA-220.010

Sealed proposals for installing metalclad switchgear in the Switch House at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:45 P.M., Tuesday, July 14, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, June 25, 1953.

Bids: July 29, 1953

Project No. G.S.A. 104-1

NOTICE TO CONTRACTORS

Bid Date—Wednesday, July 29, 1953
Time of Opening—12:00 o'clock Noon—Eastern Standard Time
1:00 o'clock P.M.—Eastern Daylight Saving Time

The General State Authority will receive at the above office sealed proposals, which will be publicly opened and read at above stated time for the Contracts listed below, which comprise all construction in connection with Project No. G.S.A. 104-1, FLOOD CONTROL DAM AND RESERVOIR, FIRST FORK SINNEMAHONING CREEK, CAMERON AND POTTER COUNTIES, PENNSYLVANIA; plans and specifications prepared by Gannett, Fleming, Corddry and Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania.

	Bid Guaranty	Plans Deposit
Contract No. G.S.A. 104-1.1—General Construction	$200,000.00	$100.00
Contract No. G.S.A. 104-1.4—Electrical Construction	$3,000.00	$10.00

Each proposal must be accompanied by a Certified Check, Bank Cashier's Check, Trust Company Treasurer's Check or by a Bid Bond, on the form furnished by The General State Authority, as a bid guaranty payable to The General State Authority, in the amount designated above. SPECIAL NOTE: All checks for plans deposit and all Bid Bonds, Certified Checks, Bank Cashier's Checks or Trust Company Treasurer's Checks for Bid Guaranties, MUST be made payable to THE GENERAL STATE AUTHORITY.

Plans, specifications, contract document forms, and proposal forms not exceeding two (2) complete sets may be secured by prospective bidders by applying to The General State Authority, Harrisburg, Pennsylvania, and depositing the amount stated above, which deposit will be refunded only upon receipt of a bona fide bid, and return of all plans and specifications in good condition within ten (10) days after the opening of bids; otherwise, the deposit will be forfeited. Separate checks must be submitted for plans and specifications for each contract.

Plans and specifications may be reviewed free of charge at the offices of The General State Authority located at 18th and Herr Streets, Harrisburg, Pennsylvania.

PLANS AND SPECIFICATIONS WILL NOT BE FURNISHED UNLESS ABOVE PLANS DEPOSIT ACCOMPANIES REQUEST.

The General State Authority reserves the right to reject any or all bids and to accept or reject any part of any bid and to waive any defects or irregularities in bids.

All proposals on Contract No. G.S.A. 104-1.1 will be read prior to the reading of any proposals on Contract No. G.S.A. 104-1.4 and any Bidder submittting a proposal on both contracts may attach a written state-

(Continued on the following page)

OFFICIAL PROPOSALS

ment to his proposal for Contract No. G.S.A. 104-1.4 requesting that such proposal be withdrawn, or in the interval between the reading of proposals on both contracts any such Bidder present at the bid opening may request that his proposal on Contract G.S.A. 104-1.4 be withdrawn; but only in the event that he is not the lowest Bidder on Contract No. G.S.A. 104-1.1. In the case of such proposal withdrawal, the Bidder's BID GUARANTEE will be returned without forfeiture.

The dam chiefly consists of an earth-rock embankment approximately 170 feet high, a concrete intake structure 210 feet high, a 16 foot diameter concrete lined tunnel 1150 feet long, a concrete lined stilling basin 230 feet long, and a concrete lined spillway 260 feet wide.

The approximate quantities of the principal items of work included under Contract No. G.S.A. 104-1.1—General Construction, are listed as follows:

600,000 cubic yards—Stripping and Common Excavation
700,000 cubic yards—Rock Excavation
14,500 cubic yards—Tunnell Excavation
1,570,000 cubic yards—Earth Embankment
575,000 cubic yards—Rock Embankment
33,000 cubic yards—Concrete
1,140 tons—Reinforcing, Structural and Miscellaneous Steel roducts
12,000 lineal feet—Diamond Drilling and Pressure Grouting
260 foot long Concrete Spillway Bridge Intake Superstructure
100 ton Traveling Crane
Tractor type gates complete with guides, covers, conduit liners and service hoists for two 8 foot by 16 foot sluices.
Stream gaging tower, cableway and gagehouse.

The work involved under Contract No. G.S.A. 104-1.4 includes the extension of electric service from terminal pole of utility company into the intake structure and about the project site as required for interior and exterior lighting, heating of various portions of the intake structure, and the operation of traveling crane, sluice gates, water pumps and similar equipment. Equipment to be furnished under this Contract includes a 50 K.W. gasoline driven stand-by generator, control center, electric heaters, lighting fixtures, metal conduit and other electrical appurtenances.

WARREN W. HOLMES,
Acting Executive Director
The General State Authority

Bids: July 8, 1953

Erection of Two Schools

ADVERTISEMENT FOR BIDS

The Alton Community Unit School District No. 11, Madison County, Illinois, will receive sealed bids for the erection and completion of Two Elementary School Buildings, one for the Rodgers Avenue Site and one for the Obermiller Site on Milton Road until 8:00 P.M. Central Daylight Saving Time on the 8th day of July at the office of the Secretary of the Board of Education, Haskell House, 1211 Henry Street, Alton, Illinois, at which time and place all bids will be publicly opened and read aloud.

Separate bids will be received on the Milton School and on the North Rodgers School. Combined bids will be received on Milton and North Rodgers Schools.

Three separate bids on the above combination shall be received as follows:

1. General Construction Work
2. Plumbing and sewering
3. Heating, Ventilating and Controlling
4. Combined Bid on Plumbing and Sewering and Heating, Ventilating and Controlling
5. Electric Work
6. Kitchen Equipment

Each successful bidder will be required to qualify for and to furnish a satisfactory performance bond secured by a qualified Surety Company in the full amount of the Contract.

The Contract Documents, including Plans and Specifications, will be on file after June 15, 1953 at the following offices:

Board of Education—Haskell House
1211 Henry Street, Alton, Illinois
Albert M. Goedde, Architect—3205 Brown Street, Alton, Illinois and 1452 State Street, East St. Louis, Illinois
Plan Rooms of the F. W. Dodge Corporation located at 721 Olive Street, St. Louis, Missouri

One set of the documents may be obtained for the purpose of submitting a bid by depositing a certified or cashier's check in the amount of $30.00 with Albert M. Goedde, Architect, East St., Louis, Illinois. The deposit for one set of documents will be returned to each actual bidder submitting a regular bid in accordance with the provisions set forth herein who returns the documents in good condition.

The Community Unit School District No. 11, Madison County, Illinois, reserves the right to reject any or all bids, to waive any informalities in bidding, and to accept the bid that in its judgment will be in the best interest of the School District.

A certified check, cashier's check, bank draft, or bid bond, made payable to the Community Unit School District No. 11, Madison County, Illinois, in an amount of not less than 5% of the amount of the bid shall be submitted as a bid deposit with each bid, which said deposit shall be forfeited to said School District No. 11, if the bidder refuses to execute a contract upon acceptance of his bid, or fails to qualify therefore. Bid bond shall be secured by a qualified Surety Company.

No bid may be withdrawn after the opening of bids without the consent of the Board of Education, Community Unit School District No. 11, Madison County, Illinois, for a period of 30 days thereafter.

GEORGE DAVIS, Secretary
Community Unit School District No. 11
Madison County, Alton, Illinois

Bids: June 30, 1953

Construction of Sewers

NOTICE TO CONTRACTORS

Sealed proposals will be received by the Commissioners of Public Works at his office, Town Hall Annex, Greenwich, Connecticut, until 11:00 A.M. (D.S.T.) on the 30th day of June 1953, for constructing about 4328 feet of sewers and other incidental work from Sunshine Avenue to Old Orchard Road, Greenwich, Connecticut.

A certified check for Three Thousand Dollars ($3,000.00) must accompany each bid.

Bidders will be required to submit data covering financial resources, equipment and ability to perform the work rapidly and in a satisfactory manner.

The right is expressly reserved to reject any or all bids, or to accept such bid as appears to be for the best interest of the Town.

Bidding sheets, plans and specifications may be obtained at the office of the Engineers, S. E. Minor & Co., Inc., Room 31, Smith Building, Greenwich, Connecticut.

Department of Public Works
By Joseph W. Cone
Commissioner

Greenwich, Connecticut
June 15, 1953

Bids: July 14, 1953

Sealed proposals will be received by the West Virginia Turnpike Commission for:

Contract No. 22, 22A, 22B

The work to be done under Contract 22 consists generally of the construction of three concrete rigid frame bridges as follows: Bridge No. 48 located at about Mile 53.0, Bridge No. 50 located at about Mile 53.6, both near the town of Westerly in Fayette County, and Bridge No. 59, located at about Mile 60.5 near the town of Burnwell in Kanawha County, all along the route of the Turnpike and all in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

Contract 22 consists of the combined quantities of Contract 22A and Contract 22B.

The principal items of work include:

	Approximate Quantity 22A	22B
Excavation (all types)	2,615	1,735 Cu. Yds
Porous Fill and Common Embankment	2,300	900 Cu. Yds
Steel Piles (Furnish)	11,000 Lbs.	
Steel Piles (Drive)	210 Lin. Ft.	
Concrete	2,780	1,520 Cu. Yds
Reinforcing Steel	407,000	283,000 lbs.
Culvert Pipe and Underdrain	910	630 Lin. Ft.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston 5, West Virginia until 9:00 A.M. Eastern Standard Time, and thereafter at the House of Delegates Chamber, State Capitol, Charleston, West Virginia until 10:00 A.M. Eastern Standard Time, on July 14, 1953, at which time and place said proposals will be publicly opened and read.

WEST VIRGINIA TURNPIKE COMMISSION
D. H. Morton
Chairman

Bids: July 14, 1953

THE PORT OF NEW YORK AUTHORITY
Port Authority Building

Eleventh Floor Alterations

CONTRACT EXD-130.007

Sealed proposals for performing alterations on the eleventh floor of the Port Authority Building, 111 Eighth Avenue, New York, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York, 11, N. Y., until 2:30 P.M., Tuesday, July 14, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, June 25, 1953.

Bids: July 21, 1953

THE PORT OF NEW YORK AUTHORITY

Holland Tunnel Toll Booths, Canopy and Floodlight Poles

CONTRACT HT-130.007

Sealed proposals for the construction of toll booths and a canopy and the installation of floodlights at the New Jersey Plaza of the Holland Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M., Tuesday, July 21, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1110, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, June 25, 1953.

Bids: August 5, 1953

City of Chicago Invites Bids for Three (3) Sections of Tunnel Construction

Sealed proposals on three (3) sections of tunnel construction will be received by the Department of Purchases, Contracts and Supplies until 11:00 A.M., Central Daylight Saving Time, Wednesday, August 5th, 1953, at Room 401, City Hall, Chicago, Illinois, at which time and place all such proposals will be opened and read publicly.

Brief description of the three tunnel sections are as follows:

SECTION A. Work consists of the construction of four shafts, four lengths of tunnel in rock and one length of tunnel in clay, together with all other work appurtenant thereto. BID DEPOSIT—ONE HUNDRED EIGHTY THOUSAND DOLLARS ($180,000.00).

SECTION B. Work consists of the construction of a work shaft, two lengths of tunnel in rock together with all other work appurtenant thereto. BID DEPOSIT—ONE HUNDRED FORTY-FIVE THOUSAND DOLLARS ($145,000.00).

SECTION C. Work consists of the construction of two shafts, three lengths of tunnel in rock, one length of tunnel in clay, a by-pass structure together with all other work appurtenant thereto. BID DEPOSIT—SIXTY THOUSAND DOLLARS ($60,000.00).

Bidders may bid on any one section, combination of sections or all three sections.

Checks are to be drawn on some responsible bank located and doing business in the United States and are to be made payable to the Purchasing Agent, City of Chicago.

A deposit for plans and specifications of $50.00 is required for each section or $150.00 for all three sections. These deposits are returnable upon return of plans and specifications.

All communications and requests for plans and specifications should be addressed to the Purchasing Agent, Department of Purchases, Contracts and Supplies, Room 401, City Hall, Chicago 2, Illinois.

JOHN F. WARD,
PURCHASING AGENT

OFFICIAL PROPOSALS

Bids: July 9, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 9th day of JULY 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York				
Albany	FARC 53-62	Loudenville-Menands, SH 1879, Project F-1105 (2)	0.92	Asp. Conc. Ty. 1-A, Opt.	$3,000 Plans $10	$50,000
Albany-Greene	FARC 53-64	Cooksburg-Cairo, Pts. 1&2, SH 8388 Project F-567(3)	8.83	Asp. Conc. Ty. 1-A, Opt.	20,000 Plans $10	374,000
Greene	FARC 53-72 RC 53-73	Hunter-Jewett Center, S.H. 997; Hunter-Tannersville, S.H. 1242; Tannersville-Haines Falls, S.H. 1630; Project F-1104(2)	5.46	Asp. Conc. Ty. 1A, Opt.=4.48 Mi.; Asp. Conc. Ty. 1A, Opt. Widening=0.96 Mi. Misc. Work=0.02 Mi. Twin Conc. Box Br. 28'	62,000 Plans $15	1,128,000
Schenectady	MT 53-12 RC 53-83	New York State Thruway-Mohawk Sect. Sub. 1 (Gregg Rd.-Gordon Rd.); Interchange with S.H. 641; Schenectady-Rotterdam Jct. S.H. 641	2.88 Acc. 1.70 Thy.	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide=4.58 Mi. Hy. Sep. Comp. I-Beam 53.5' RR Sep. Built-up Beam-Girder 62'	140,000 Plans $50	2,585,000
Warren	FARC 53-69	Glens Falls-East Lake George, Pt. 1, S.H. 1666; Project S-1022(3)	3.94	Asp. Conc. Ty. 1-A, Opt.	6,000 Plans $10	111,000
		DISTRICT No. 2				
		L. KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York				
Fulton & Montgomery	FARC 53-76	Amsterdam City Connection, S.H. 9043; Northampton, S.H. 158; Old Plank S.H. 249; Johnstown-Broadalbin Pt. 2, S.H. 543; Project F-604(4)	6.89	Asp. Conc. Ty. 1-A, Opt.	20,000 Plans 10	363,000
		DISTRICT No. 3				
		WILLIAM ROBINSON, District Engineer, Weigh Lock Bldg., Syracuse 1, New York				
Cayuga	FARC 53-67	Montezuma-Port Byron, S.H. 5610; Port Byron-Weedsport, S.H. 5609; Project F-534(3)	2.63	Asp. Conc. Ty. 1-A, Opt.	27,000 Plans $10	461,000
Onondaga	FARC 53-43	Collamer, S.H. 348; Syracuse-Bridgeport, Pt. 1 S.H. 672; Project F-U-994(4)	1.90	9" Cem. Conc. Pavt. 2@24' Wide=1.80 Mi. Misc. Work=0.10 Mi.	28,000 Plans $10	500,000
		DISTRICT No. 6				
		J. H. THOMAS, District Engineer, State Office Building, Hornell, New York				
Steuben	FARC 53-70	Avoca-Wallace-Cohocton, S.H.5564; Project F-627(10)	2.50	Asp. Conc. Ty. 1-A, Opt.	$16,000 Plans $10	$286,00
Steuben	FARC 53-66	Bath-Hammondsport Pts. 1 & 2, S.H. 5517-5495; Project U-F-347(4)	4.85	Asp. Conc. Ty. 1A, Opt.=4.84 Mi.; Misc. Work=0.01 Mi.	70,000 Plans $15	1,185,000
Steuben	FARC 53-74	Greenwood-Jasper, S.H. 1758; Project S-418(1)	3.82	Asp. Conc. Ty. 1-A, Opt.	$19,000 Plans $10	322,000
		DISTRICT No. 7				
		R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York				
Jefferson	FARC 53-65	Jewettville-Dexter, S.H. 8015; Project S-53(2)	2.01	Asp. Conc. Ty. 1-A, Opt.	10,000 Plans $10	198,000
Lewis & St. Lawrence	FARC 53-68	Harrisville-Fine,Pts,1 &3,S.H.8337;Project F-382(5)	5.00	Asp. Conc. Ty. 1-A, Opt.	13,000 Plans $10	241,000
		DISTRICT No. 8				
		J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, New York				
Columbia	FARC 53-75 FASSH 53-10	West Taghkanic-Ancram, S.H. 9058; West Taghkanic-Bell Pond, S.H. 9088; Bell Pond-Claverack, S.H. 1919; Livingston-Hudson, Pt. 2A; Project S-388(1); F-587(6)	5.30	Asp. Conc. Ty. 1-A, Opt.	53,000 Plans $15	886,000
Ulster	B.A. 53-1	Kingston-Rhinecliff Bridge (Cont. 5) West Approach	0.67	Grading and Drainage	9,000 Plans $10	163,000
Westchester	H.T. 53-5 S.T. 53-25 R.C. 53-88	N. Y. State Thwy.-Hudson Sect. Subd. 9A, Tappan Zee Br., Tarrytown App., S.H. 9206, Broadway-Hastings-Dobbs Ferry-Mt. Pleasant-Tarrytown-No. Tarrytown; Van Wort Av., Sheldon Av.	0.88 Thy. 1.48 Acc.	9" Cem. Conc. Pavt. 60' & Var. Wide=0.47 Mi.; Asp. Conc. Ty. 1A, Opt.=0.25 Mi.; Grading=1.56 Mi.; Misc. Work=0.08 Mi.; Br. App. Span Composite I.B. Total Length 385' Hy. Gr. Sgs. Composite I.B. Total Length 277.56'	215,000 Plans $50	3,887,000
		DISTRICT No. 9				
		F. W. DONOVAN, District Engineer, 71 Frederick St., Binghamton, New York				
Chenango	FARC 53-71	Afton-Coventry, Pt. 1, S.H. 1171; Project S-668(2)	3.98	Br. Mac. Type 1 (Pen. Meth.)	13,000 Plans $10	244,000
Chenango	FARC 53-77	Afton-Bainbridge, S.H. 5261; Project F-360(8)	2.69	Asp. Conc. Ty. 1A, Opt.	8,000 Plans $10	138,000
		DISTRICT No. 10				
		M. E. GOUL, District Engineer, Montauk Highway at Little East Neck Rd., Babylon, L. I., New York				
Nassau	FASG 53-6	Peninsula Boulevard; Project SG-319(2)	0.66 R.R. 0.21 Hwy.	9" Cem. Conc. Pavt. 2 @ 24' Wide=0.20 Mi.; Misc. Work=0.01 Mi. RR Sep. Plate Girder 92.7" Railroad Track Work=0.66 Mi. Br. Twin Box 21.2'	50,000 Plans $15	853,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal **must be accompanied** by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: August 26, 1953

The Dev. & Producing of Under Ground Water

"Sealed proposals will be received by the Director of Public Service at the City Hall until 2:00 P.M., Eastern Standard Time, August 26, 1953, for the development, producing and supplying of 20 to 40 M.G.D. of ground water as per general City specifications and under such additional specifications, plans and proposals as may be submitted by the bidder. Bids will be received on a lump sum basis and publicly opened and read on the above date.

Instructions to Bidders, General Specifications, Proposal, Hydrological Reports and pertinent data, may be obtained from the Director of Public Service, City Hall, Grand Rapids, Michigan, upon the deposit of Twenty Dollars ($20.00) for each set of documents. Deposit will be refunded upon the return of such set, in good condition, within 30 days after the opening of proposals.

A certified check or bidder's bond for a sum not less than five per cent (5%) of the amount of the proposal will be required with each proposal.

The right is reserved by the owner to accept any proposal, to reject any proposal and to waive irregularities in proposals. No bid may be withdrawn after the above date and time for receiving bids for a period of thirty (30) days.

CITY OF GRAND RAPIDS, MICHIGAN
George E. Bean, City Manager
James E. Baker, Purchasing Agent"

U. S. Government

Sealed proposals for the purchase of 3,072 net tons of ferrous scrap, including 1661 tons heavy melting steel, offered for sale by Panama Canal Company under invitation 24 will be received at Panama Canal Company, 24 State Street, New York 4, N.Y., and at office of Superintendent of Storehouses, Balboa, Canal Zone, until 10:30 A.M. Eastern Standard Time, July 21, 1953. Blanks and information available at 24 State St., New York, 4, N.Y. Telephone BO 9-5380.

(More Official Proopsals on Page 97)

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York City Office 330 W. 42nd St., N. Y. 36 for July 9th issue closing June 29th

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Fine Opportunity for CAPABLE Construction Equipment SALESMEN

Established N. Y. State Distributor of nationally known lines has attractive openings for two able men, exclusive territories—liberal commissions. Excellent possibilities for right parties with chance to advance to Sales Mgr. and to invest in long established lucrative business. Replies kept strictly confidential.

SW-8275, Engineering News-Record
330 W. 42 St., New York 36, N.Y.

SALES ENGINEERS

We need two men with sales experience and engineering training, preferably in civil engineering. Selected men will be given thorough training. Work will be with state and city highway officials. Some knowledge of highway construction helpful. Salary and expenses. Give full information about yourself.

RW-8048, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

An Alert Mechanical Engineer with Some Knowledge of Electrical Engineering . . . Must Be a Good Calculator . . .

PHILIPS & DAVIES, INC.
KENTON, OHIO

WANTED—An experienced CONSTRUCTION SUPERINTENDENT

To supervise erection of a 50,000 KW, 1450 psi addition to a power station and also a construction accountant for this work. Estimated time for construction 12 to 18 months. Construction to start January, 1954.

P-8139, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

RESIDENT ENGINEER CONSTRUCTION ENGINEERS

Instrumentmen, Inspectors, Materials Engineers, experienced on heavy bridge and tollroad construction; qualified in concrete, asphalt, soils controls; surveys; contract administration. Send detailed resume to:

Box 265, Milan, Ohio

SANITARY ENGINEERS

California offers positions with opportunity for professional advancement. Two years experience related to treatment and disposal of sewage and industrial waste, plus college engineering degree. Salary $395 to $481. Write today. Dept. PH-2, Recruitment Section, State Personnel Board, 1015 L St., Sacramento, Calif.

ESTIMATOR and SALES ENGINEER

For Structural Steel Plant 700 Ton per month capacity compensation commensurate with ability and experience. Write fully stating age, education, experience and salary desired.

ACORN IRON WORKS, INC.
9260 Freeland Avenue, Detroit 28, Michigan

ENGINEERS - GEOLOGISTS

Technicians experienced in Soils—Concrete and Asphalt Control Work.

Also

Graduate Engineers with P.E. Registration having extensive experience in Soils—Concrete and asphalt. Give complete details including salary.

TOLEDO TESTING LABORATORY
1810 No. 12th St. Toledo 2, Ohio

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

EXPERT, YOUNG, Male Stenographer wanted, machine or pencil shorthand, in main office of large Illinois construction company. High pay, group insurance, pension and profit-sharing plans, annual paid vacation, other unusual advantages. Replies confidential. P-8135, Engineering News-Record.

ESTIMATOR WANTED by large General Contracting Firm located in Central Illinois. Applicant to be under 40 years of age,experienced in estimating all types of General Building Construction. If interested, advise age, education experience and salary desired. This is an excellent opportunity for competent estimator as our Chief Estimator is retiring in near future. P-8112, Engineering News-Record.

WANTED—GRADUATE Civil Engineer, some experience in the structural field preferred, by long established engineering promotional and educational organization, to be a representative in the Long Island area. Age 25 to 40. Give resume of education, engineering experience, salary requirements in reply. P-8208, Engineering News-Record.

WANTED—GRADUATE Civil Engineer, some experience in the paving and public works field preferred, by long established promotional and educational organization, to be a representative in the Central New York State area. Age 25 to 40. Give resume of education, engineering experience and salary requirements in reply. P-8209, Engineering News-Record.

CIVIL ENGINEERING, Master's or Ph.D. degree desired. Rank and salary. Instructor on up in higher grade depending on experience. Teach mechanics, fluid mechanics, testing materials. All laboratories new. Interesting opportunity to develop latest new fluid mechanics laboratory. East. P-8081, Engineering News-Record.

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(Continued on page 90)

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P-8276, Engineering News-Record
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P-8096, Engineering News-Record
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POSITIONS VACANT
(Continued from page 89)

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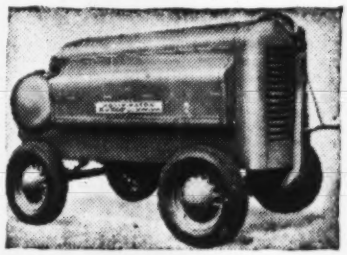

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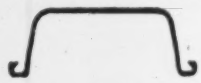

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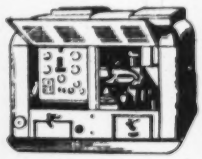

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OFFICIAL PROPOSALS

(Continued from page 88)

Bids: July 13, 1953

Delaware River Port Authority Administration Building Bridge Plaza, Camden, N. J.

THE ANCHORAGE FOUDATIONS—Schedule "A"—Philadelphia Anchorgae Foundation
Schedule "B"—Gloucester Anchorage Foundation
FOR BRIDGE CONNECTING PACKER AVENUE, PHILADELPHIA AND GLOUCESTER CITY, NEW JERSEY—KNOWN AS CONTRACT NO. 2

Sealed bids will be received for the erection of the Anchorage Foundations, known as Schedule "A", Philadelphia Anchorage Foundation, Schedule "B", Gloucester Anchorage Foundation known as Contract No. 2 at the office of the Secretary of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 1:30 P. M. (Eastern Daylight Time) July 13, 1953 at which place and time they will be publicly opened and read.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by certified checks in the sum of $125,000 for each Schedule Bid payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bids. The Surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work and examine the boring samples.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO, SECRETARY

Bids: July 10, 1953

NOTICE TO BIDDERS

Sealed proposals will be received until 10:00 A.M. EST, July 10, A.D., 1953, in the office of the City Engineer. Plans, Specifications, and Contract Documents are on file in the office of the City Engineer.

Bidding blanks may be obtained from the office of the City Engineers. Plans, Specifications, and Contract Documents are on file in the office of the City Engineer.

A deposit of $25.00 for Plans and Specifications, and of $15.00 for each additional set of plans or specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within 10 days of the opening of bids.

A certified check for 2% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the Bidder. This check shall be retained by the payee as liquidated damages should the Bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the Proposal, in the event the Proposal of the Bidder is accepted.

The City Commission reserves the right to reject any or all bids.

H. Milton Link
City Manager

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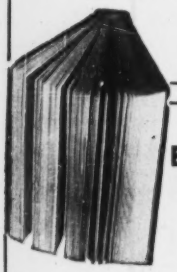

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The fourth and final pass is made with the attachment dropped to its maximum depth using blade down pressure. This forces gage rollers into contact with the pavement and steers to keep the point of the attachment blade against the pavement. This pass brings the trench to final grade. Occasionally, a roller is pulled behind the attachment on this pass to compact the bottom of the trench. The trench is now ready to receive concrete or asphalt.

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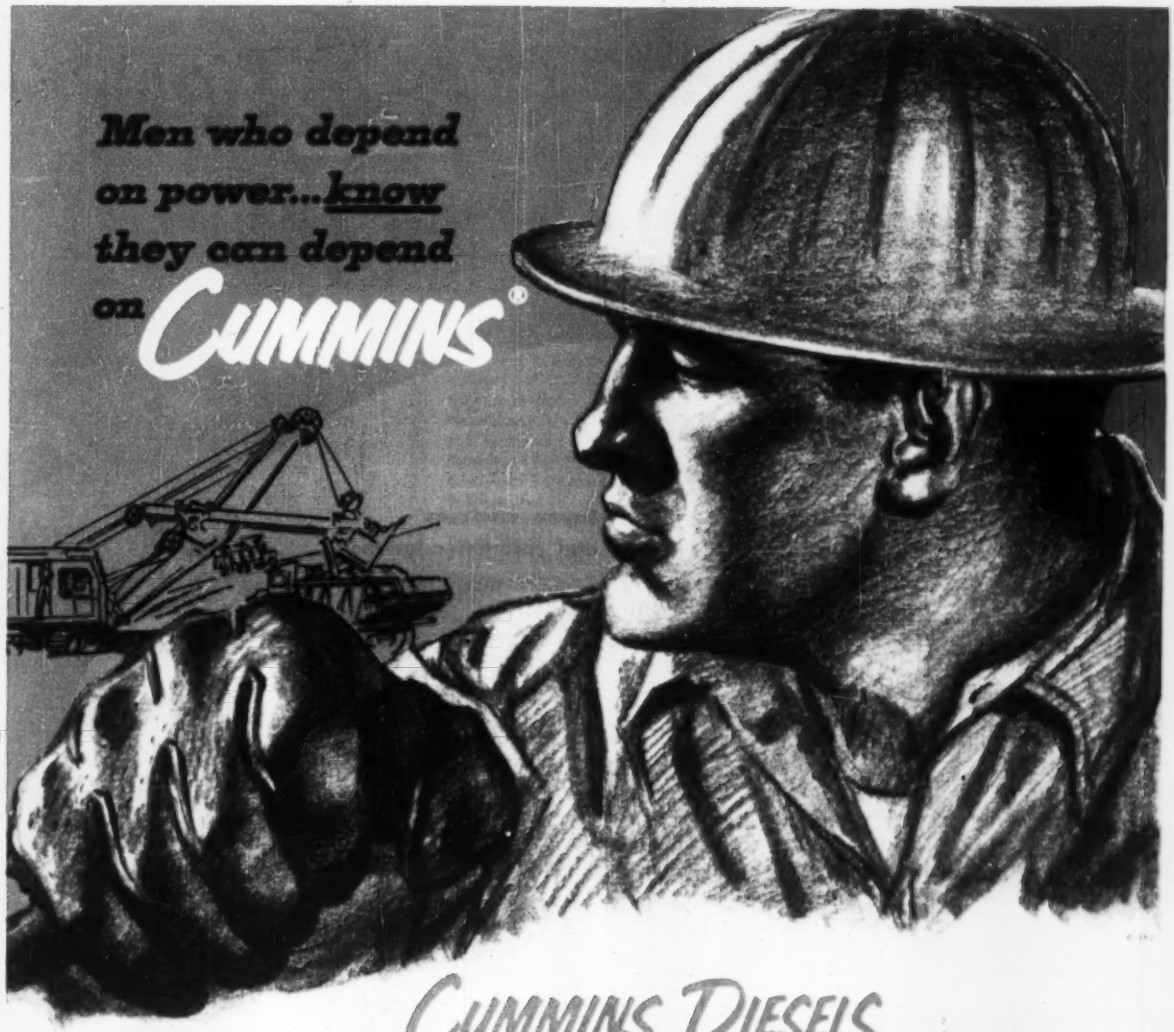

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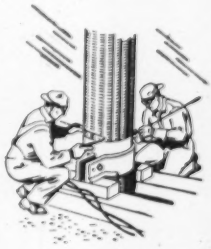

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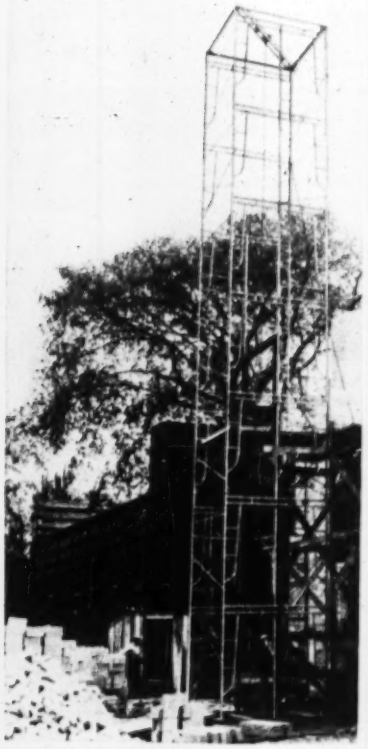

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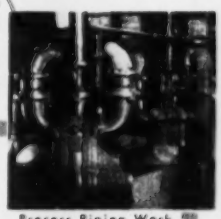

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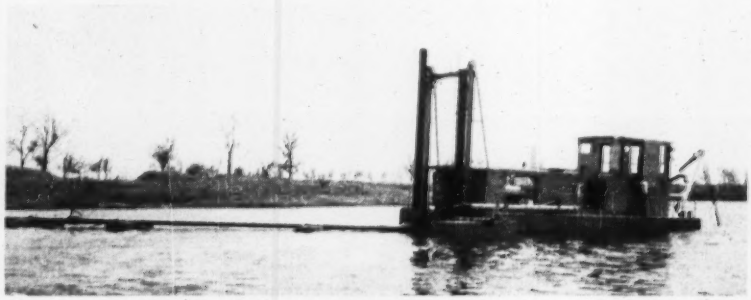

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The Dredgemaster is said to cut and pump any material including soft rock. In materials such as sand and clay, the eight-in. model will produce up to 200 cu yds per hour on pipelines up to 2,000 ft. The 10-in. machine produces up to 400 cu yds per hr with pipelines up to 3,000 ft.

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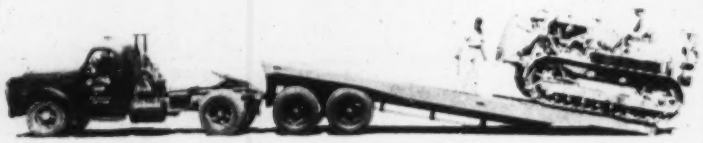
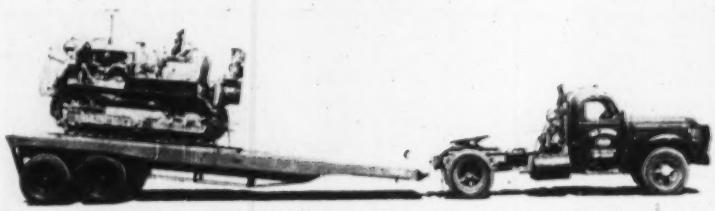
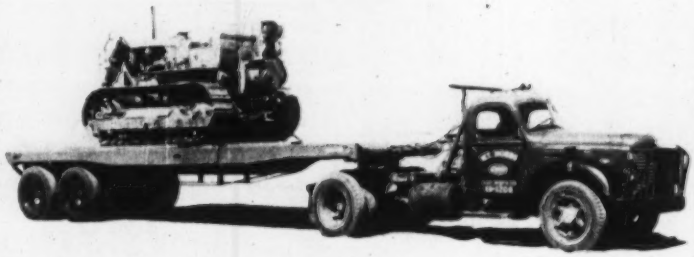


Truck placed at rear winches machinery up inclined trailer bed . . .



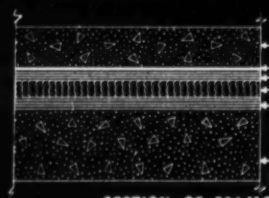
truck returned to front of trailer lifts trailer into place with winch . . .



equipment loaded, the unit is ready to roll. Trailer features center point tandem suspension and is fully adjustable for alignment. Dorsey Trailers, Elba, Ala.

FOAMGLAS®

put a lot on this Sears Roebuck roof...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Four-ply built up Roofing
2" FOAMGLAS Mopped in Place
5 Plies 15# Felt Mopped in Place
9" Concrete Roof Deck

SECTION OF FOAMGLAS APPLICATION

Sears, Roebuck retail store with parking lot on roof.

Architect: Shutze & Armistead, Atlanta, Ga. *General Contractor:* Wm. Muirhead Construction Company, Durham, N.C. *Roofer:* Guaranteed Waterproofing Company, Greensboro, N.C.

By putting the parking lot on the roof Sears, Roebuck and Co. cut land needed in half, but it took FOAMGLAS insulation to make it practical for their new Winston-Salem store. Other insulations lack compressive strength enough to withstand such a load, while each 2" x 12" x 18" block of FOAMGLAS used theoretically could support the weight of nine Sears' customers' cars.

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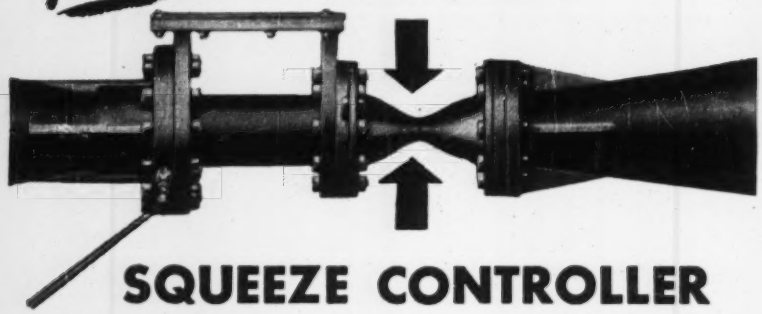

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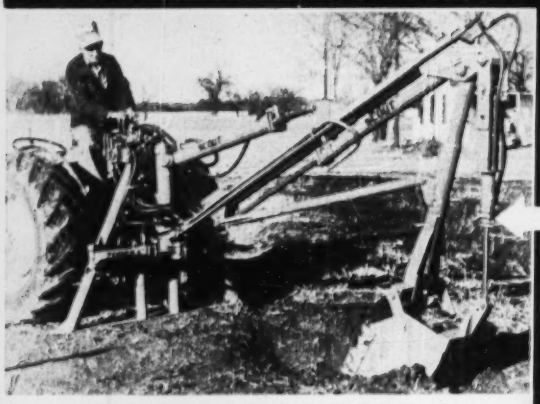
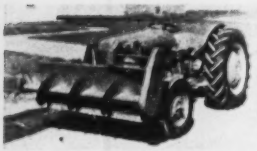


DIG FAST

SAVE LABOR

SHAWNEE SCOUT MODEL 60



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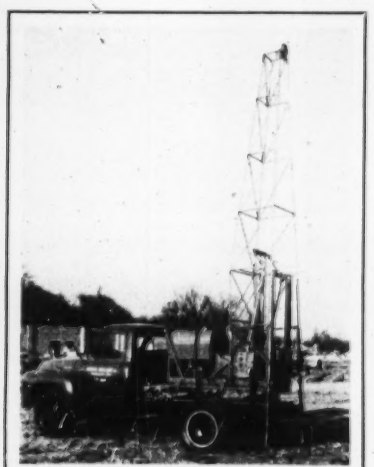
Portable, the unit can be attached to any standard make truck with the towing hitch. Running gear is two-wheel, single-axle using standard 6:50 x 16 6 ply tires. Landing gear is of retractable swivel type with adjustable leveling device. HETHERINGTON & BERNER, INC., 700 KENTUCKY AVE., INDIANAPOLIS 7, IND.



PORTABLE DEEP ROTARY drill features 500-ft drilling depth and one man operation. Skid or trailer-mounted, the drill may be powered by an independent power plant or power take off from the truck engine. The B-52's dual hydraulic cylinder is said to assure positive feed with five, six or seven ft stroke and 12,000 lbs pressure. The rig combines three types of drilling: auger, rotary core and percussion. Mobile Drilling, Inc., 960 N. Pennsylvania St., Indianapolis, Ind.

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New Products briefs . . .

• **Fluxing compound**—A new fluxing compound for use in soldering aluminum is said to permit non-corrosive soldering of all aluminum alloys, except those containing high percentages of silicon, as well as the joining of aluminum to other metals. Manufactured by Insulation & Wires Inc., 3435 Chouteau Ave., St. Louis 3, Mo., Aluma-Flux can be used in either powdered or molten form.

• **Electrode holder**—A new electrode holder, claimed to be cooler and lighter than conventional types, is now available from the Welding Products Division, A. O. Smith Corp., Box 584, Milwaukee, Wis. According to the company there is less tendency for this holder to roll in the operator's hand because a unique design places the jaw lever close to the handle; a squeeze of the hand releases the electrode stub. The holder is manufactured in 200, 300 and 500 amp sizes.

• **Rubber cushioned abrasives**—A series of rubber cushioned abrasives is now available from the Brightboy Industrial Division, Weldon Roberts Co., Sixth Ave. & N. 13th St., Newark 7, N. J. Manufactured in three grades 54BL, coarse; 70BL, medium, and 120BL, fine, the abrasives are made in a variety of sizes in wheels, disks, sticks, rods, blocks, tablets, cylinders and tablets.

• **Contractors' pumps**—A new line of heavy duty contractors' pumps has been developed by Lancaster Pump and Manufacturing Co., Inc. Model 675, a 1½-in. pump has a 1.5-hp engine and is capable of heads to 90 ft—capacity is 6,600 gal per hr. Model 676, a 2-in. pump, has a 1.9-hp. engine for discharge heads to 100 ft and a maximum capacity of 8,300 gal per hr.

• **Optional engine**—Availability of a Caterpillar engine for its line of 8-12 and 10-14-ton tandem rollers is announced by the Huber Manufacturing Company, Marion, Ohio. The engine is the Caterpillar model D-315 diesel engine developing 66 hp at governed speed. The engine has a 4½-in. bore and a 5½-in. stroke and 350 cu in. displacement.

• **Name change**—The Wilson-Albrecht Co., Inc., manufacturer of scaffolds, has adopted a new corporate name: Waco Manufacturing Company, 3565 Wooddale Avenue, Minneapolis 16, Minn.

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EDITORIALS

Lessons taught by tornadoes

BECAUSE GOOD CONSTRUCTION could have cut the death toll and reduced structural damage in the tornadoes that spread death and destruction in Texas, Michigan, Ohio, Massachusetts and New Hampshire in recent weeks, these disasters point up the important role engineers and architects can play in encouraging the use of sounder construction, especially for housing. No doubt, a large percentage of the deaths and injuries was unavoidable, because many of these people were caught in the open or in small houses in the heart of the twisters. But many others who were trapped in fringe-area buildings that blew apart might have escaped if better construction had been used.

The tornadoes were born when cold, dry air clashed with warm, moisture-laden air forming vortexes in which swirling winds attained velocities estimated at 500 mph or more, while air at the center was sucked upward at probably 100 mph. As a consequence, these twisters were as devastating as the shock wave of an A-bomb. Anything in their paths was blasted by terrific pressure or pulled apart by suction. Yet, in the wreckage lie clues to what might be done to make buildings more blast resistant with very little increase in construction costs.

For example, the evidence seems to indicate that bearing walls can resist the blow if they are supported laterally at sufficiently close intervals. Header courses should be used for bonding walls, and metal wall ties should be limited to types approved by the local building department. Combination walls of brick and hollow tile, stone or terra cotta should have a bond equal to that required for brick walls. If the walls can be well anchored to the lateral framing to develop rigid-frame action, so much the better.

Rigid-frame construction is desirable, in any case. It gives a building high resistance to lateral forces.

Evidence also seems to indicate that use of frangible wall and roof materials in skeleton-type construction would be helpful in preventing a blast from wind or bomb from damaging the structural frame. If curtain walls and roof are torn loose immediately, they permit pressures inside and outside the building to equalize, thus relieving the pressure on the frame. Since the first effect of a tornado, is to create a suction, tending to suck off walls and roofs, the chances of the frangible materials injuring the occupants of the building are small.

Small homes should be constructed to resist racking forces. Outer walls of wood-frame houses should contain diagonal bracing and preferably also should have diagonal sheathing securely nailed to the studs. In addition, the walls should be attached firmly to partitions, floors and roof, for lateral bracing. Furthermore, to resist uplift, floors, roof and walls should be anchored together and to the foundation walls.

Much the same conclusions as to structural design were reached by an engineering board following the tornado that devastated parts of St. Louis, Mo., in 1927 (ENR Nov. 29, 1928, vol. p. 797). But apparently these simple, inexpensive precautions have not been universally adopted because of the belief that tornadoes occur only in certain limited sections of the country. The recent incidence of tornadoes in areas in which they are considered uncommon—plus the possibility of A-bomb attacks any place in the U. S.—should do much to encourage adoption of constructions offering high resistance to uplift and lateral wind pressures. In addition, further consideration might be given to underground storage areas that might also double as cyclone cellars or bomb shelters.

As the only members of the community in a position to suggest economical methods of protecting life and property from storms and enemy bombs, engineers and architects bear the responsibility of promoting sounder construction. They can discharge this responsibility by raising their own design standards to assure structures with greater resistance to lateral and uplift forces and by encouraging adoption of adequate safeguards against such forces in local building codes.

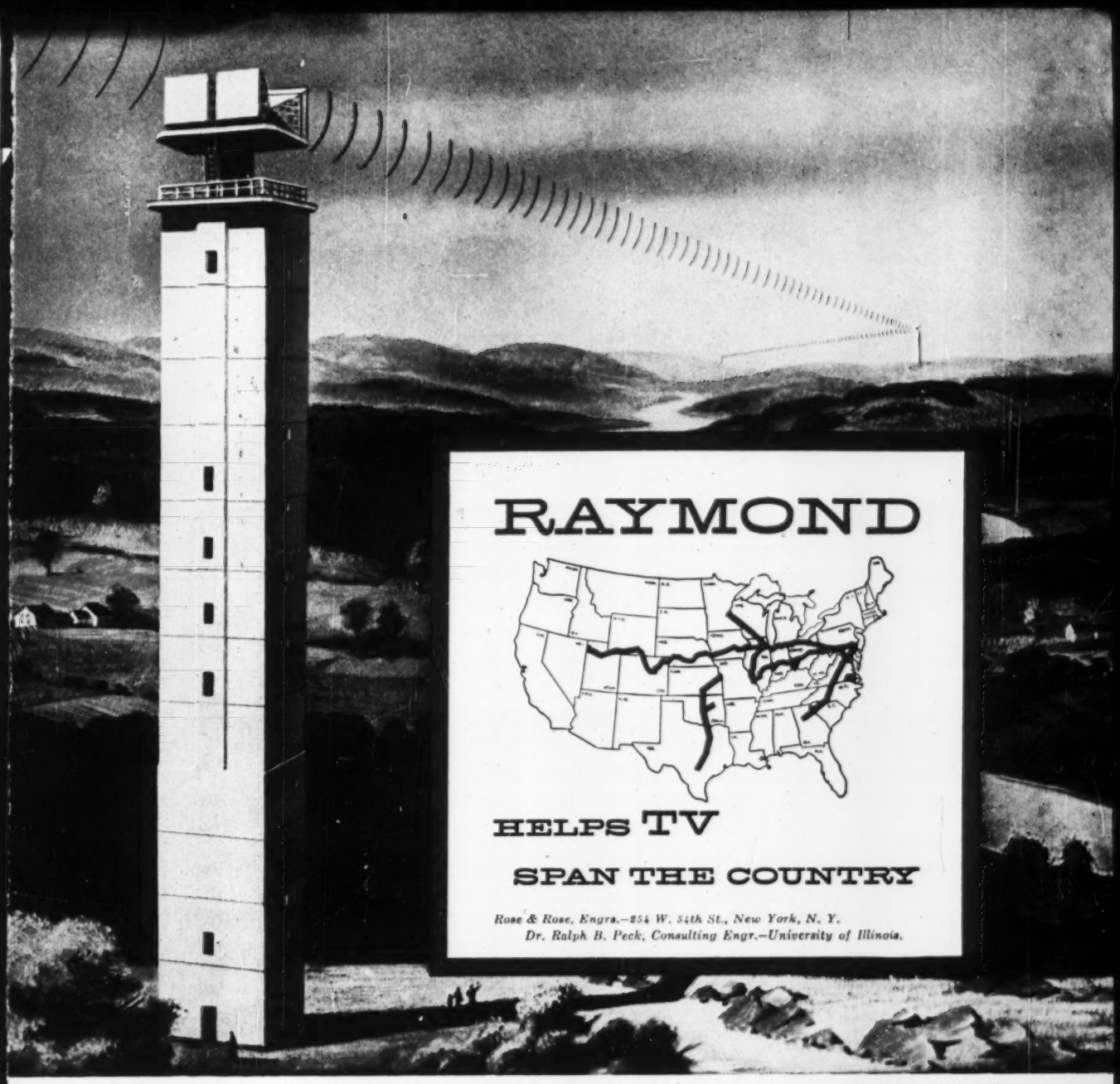
Realistic speed regulation

HIGHWAY OFFICIALS of eleven northeastern states have launched a program of strict speed control that is designed to cut highway accidents sharply during the months ahead when vacation travel puts a heavy load on all roads. It is a movement that should and will have the support of most highway users.

The highway officials will get a maximum of public support if they include in the program an effort to clear the highways of the multitude of needlessly low speed restrictions with which highway users are cursed.

In saying that we realize that many speed restrictions were set by local government agencies over which the state traffic authorities have no control. Yet we believe that many of those speed restrictions are a carry-over from past years that could be removed or made more in harmony with what safe speeds should be on a particular street or highway if an appeal to local police authorities to review their restrictions were made a part of the current campaign. Almost no cars travel at the 20 and 25 mph limits now set on hundreds of miles of main highway through built-up regions, and with modern brakes, no such low speeds are required in the interest of safety.

A realistic review of all speed restrictions should go hand-in-hand with the new enforcement program if it is to win the most public support.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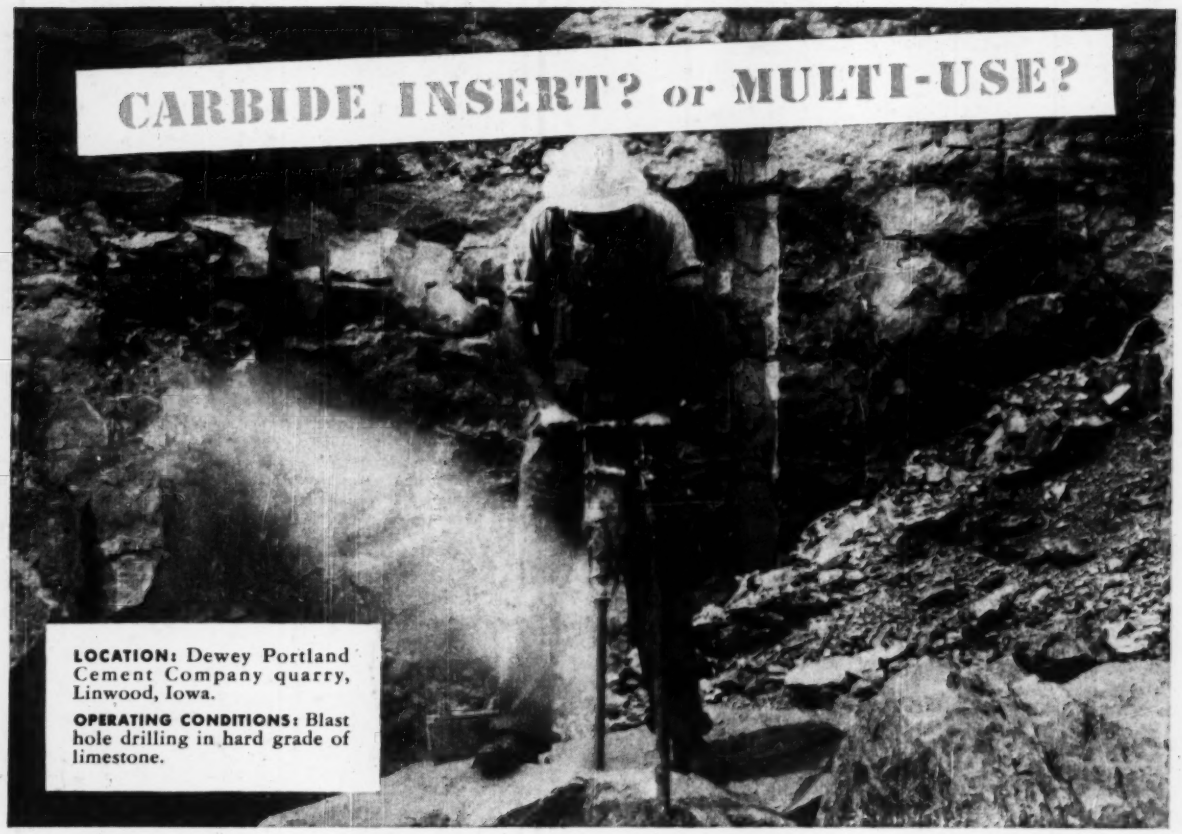
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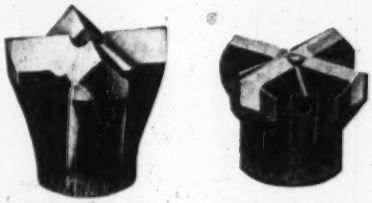

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